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HIGH TIMES

July 498



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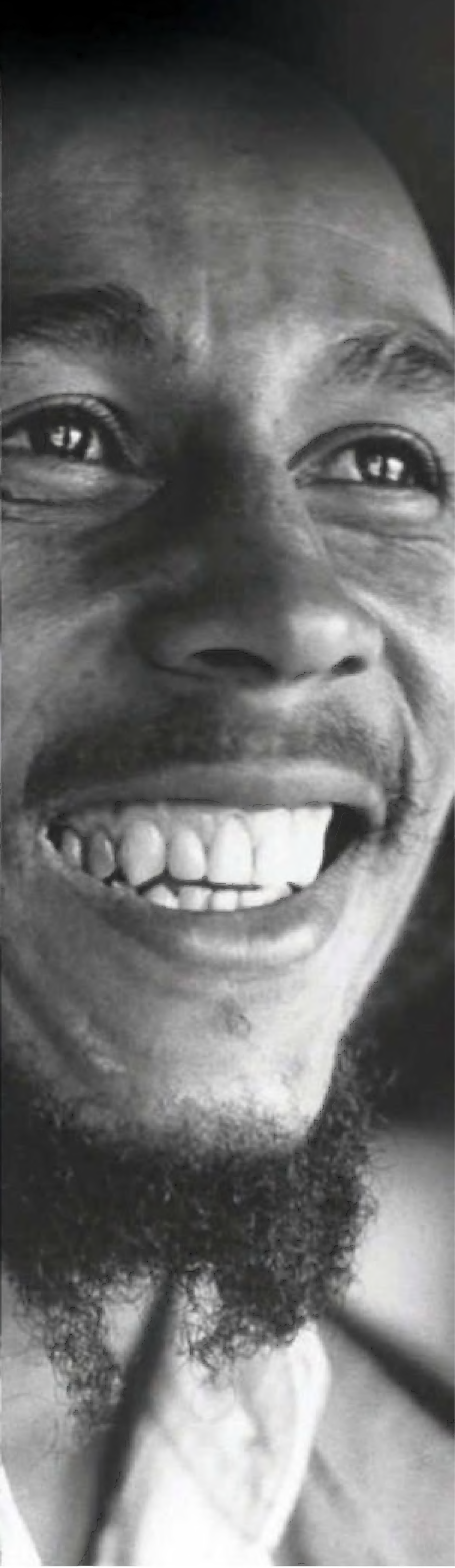
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They look at life differently, society can't pigeon hole them or put them in box, and they see things where others don't.

Their ideas are sometimes out on the fringe, the ragged edge. They have to be, because they're open to the possibilities and realities that change the world.

Some see them as a fish out of water, trouble makers and oddballs. We see them as gifted, profound and uniquely brilliant.

HIGH TIMES JULY



"I knew that these types of seeds were destined to dominate the market... Today, feminized seeds represent more than 90 percent of the market in Europe."

Strains of the Future—page 68

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45 Betting on Bud in Las Vegas

The first-ever Cannabis Cup in Nevada took place just outside Las Vegas, despite some unforeseen obstacles—and we have the photos to prove it! *By Mary Jane Gibson*

57 Soil vs. Hydro

Today, this age-old debate really boils down to whether growing cannabis indoors or outdoors is better. Nico breaks down the pros and cons associated with both and details how to get the most out of your plants. *By Nico Escondido*

68 Strains of the Future

We travel to the Basque Country of Spain to learn about the game-changing new achievements in cannabis breeding by Dinafem Seeds, including autoflowering, feminized, CBD-rich versions of classic strains. *By Danny Danko*

84 Casualties of War

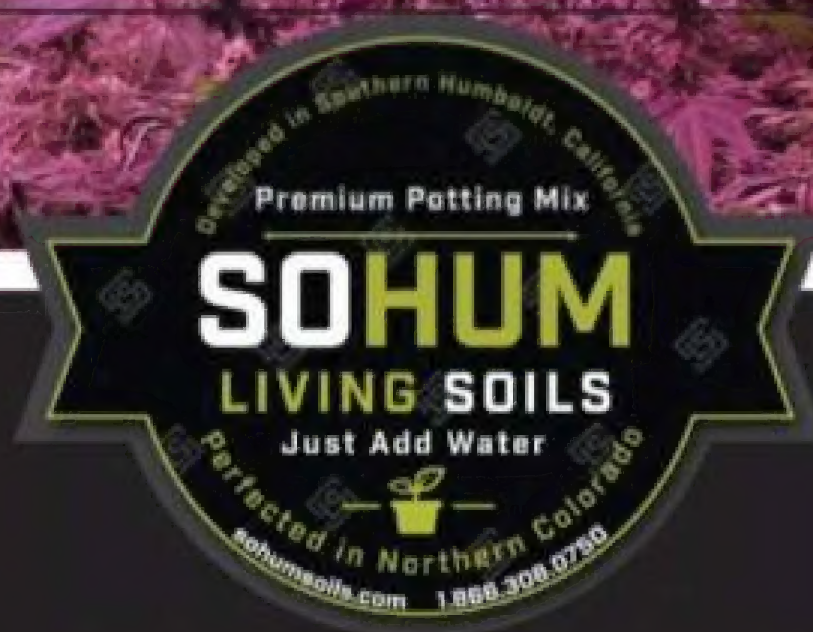
The War on Drugs is still being waged on college campuses across the country, as students with cannabis convictions find themselves barred from receiving the financial aid necessary to pursue a degree. *By Dave Lindorff*

94 Mother Plants & Clones

Successful cloning is the key to a fruitful indoor harvest, but it's also one of the more demanding cultivation skills to master. We reveal the tips and tricks for uniform healthy plants and a level cannabis canopy. *By Erik Biksa*

102 The High Times Interview: Ludacris

The Atlanta-based rapper, actor and cannabis connoisseur opens up about marijuana, movies and more before playing to a capacity crowd at the Las Vegas Cannabis Cup.



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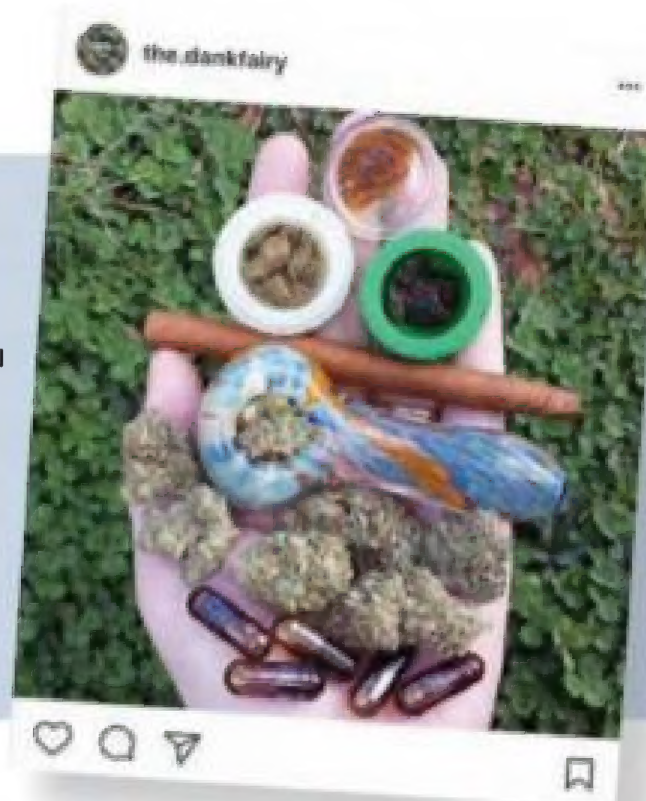
High Reviews

A lot of sites offer movie reviews but we're High Times, so our movie reviews come paired with cannabis. Check out our new online series *Cinema Stoner*, which delves into a different film each week while also examining the specific strain smoked during the viewing of the movie. Sometimes a certain strain pairs quite well with a movie, enhancing

an introspective concept with particularly contemplative cannabis. Other times, the strain and film clash—who wants to watch a taut, psychological thriller while feeling the effects of a heart racing *sativa*? If you're interested in how specific strains of marijuana match up with movies, or if you're just looking for super-stony film reviews, don't miss *Cinema Stoner*! Visit hightimes.com for more...

On Instagram

Life is full of unpleasant decisions. Should you buy that new guitar or pay rent? Should you move grandma to an old folks' home so you can start a closet grow in her room? Every now and then, it's nice to be reminded of the pleasant choices life sometimes offers up. Like the decision facing @the.dankfairy, who has to choose between pure THC capsules, Colorado-grown Bruce Banner and Blueberry flowers in a bowl or a blunt, Moroccan hash, Bruce Banner shatter and Full Spectrum terp sauce. So, what would you choose?



Smoking Poll



Have Marijuana Laws Affected Your Education?

I was denied a loan and/or scholarship.	9%
I know someone who denied a loan and/or scholarship.	9%
I was denied student housing.	1%
I know someone who was denied student housing.	3%
I was expelled from school.	10%
I know someone who was expelled from school.	21%
They have not affected me.	47%

Marijuana charges can interfere with education as students caught with pot often lose access to scholarships and loans. In fact, drug offenses are the only crimes that must be reported on federal student-aid applications. Depending on the school, students caught with pot can lose access to university housing, be expelled or even be turned over to local authorities and arrested.

The War on Drugs has impacted the lives of countless students who have had to give up on higher education after being busted for a marijuana-related offense. This month, we're taking a closer look at cannabis and education ("Casualties of War," pg. 84) so we decided to ask our readers if marijuana laws have affected their education.

According to our poll, our readers have been pretty lucky when it comes to cannabis as 47 percent report that pot laws have not affected their education. Twenty-one percent of respondents say they know someone who was expelled for pot use but just 10 percent say they personally were expelled over weed. The results were evenly split regarding financial aid as 9 percent of our readers say they were denied a loan or scholarship and 9 percent responded that they know someone who was denied student aid. **Take our latest poll online!**

We Want To Hear From You!

Tweet your best high observations and comments our way @HIGH_TIMES_Mag for a chance to be featured on this page! And be sure to follow us on Facebook (Facebook/HIGHTIMES-Mag) and Instagram (@hightimesmagazine) for all the latest news as it's happening!

@greencosm: @HIGH_TIMES_Mag thanks for making it right with #HighTimeCannabisCup see you in #SOCAL we gonna get high!!

@MikeKlimkowski: Oregon's marijuana industry sold 11,000 lbs in 3 months. Or in simpler terms, 1 Willie Nelson concert of weed. #jokes #weed @HIGH_TIMES_Mag

@catsturbation: @HIGH_TIMES_Mag marijuana laws've vastly improved my education, b/c tolerance & proper exploration of knowledge has been solidified by denver's higher ed

@KruminsAlex: @HIGH_TIMES_Mag Gov. Chris Christie sounds like a terrible choice to help solve the opioid problem! Just saying.

@Azznerak: @HIGH_TIMES_Mag I love how these #States restrict or deny something a majority of Americans want. Being in the pockets of #BigPharma must really suck.

@lakesideliberal: @HIGH_TIMES_Mag Police say a lot of things. When it comes to marijuana, they generally are lies.

@NamasteHippies: Someone buy me a lifetime subscription to @HIGH_TIMES_Mag



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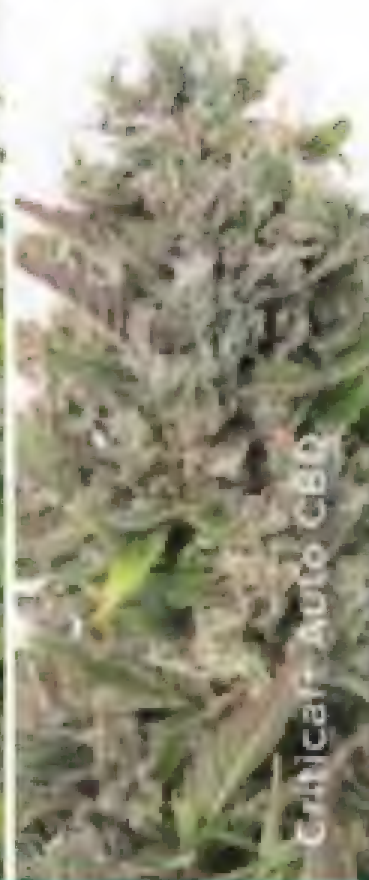
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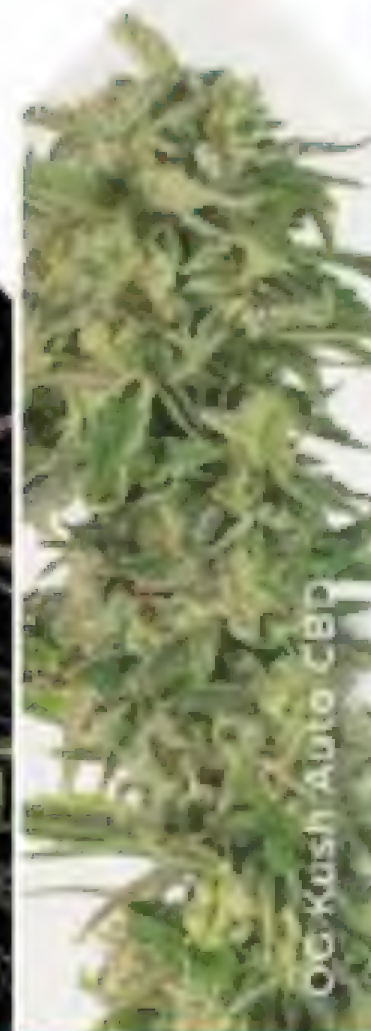
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Grow Your Own

Greetings, amigos!

Welcome back to another issue—*number 498, to be exact*—of the oldest and wisest pot magazine in the world. It's crazy to think that, this September, *High Times* will reach the rare and exclusive milestone of 500 issues. How did we do that, anyway?

Well, with loyal readers and supporters like you, of course! It also hasn't hurt to have the best scientific, medical, horticultural and overall wackiest minds on the planet contributing to this great magazine for over 43 years. And as we enter the dawn of a new era of uncertainty with a Trumped-up White House, we'd like to remind all our readers that there is no need for fear. We've been fighting this war for decades and, quite honestly, it was getting kind of boring around here with state after state conceding and admitting that marijuana is "alright"... But in the event that things start to slow down—or, even worse, revert back to the old ways of ignorance and idiocracy—we can always return to our old ways as well and start growing at home again. Hey, it worked once...

So, in this issue, we pack in the grow tips for all those readers intrigued by and interested in growing their own—it's easy, fun and *highly* rewarding! Danny Danko takes a trip to Spain to check out one of the biggest seed producers, Dinafem, which ships worldwide and can help get your home garden started with some of the best strains on Earth—now available in autoflowering, feminized, CBD-enriched versions. There's also an article by Eric Biksa with tips for cloning, if seeds aren't your thing. And I put together a little number on the age-old debate over which method is better, soil growing or hydro. Did you know that no one uses soil indoors anymore? Find out why, plus a ton of other useful factoids, tidbits and entertaining words from our home to yours.

Enjoy, everyone, and remember to check out our 500th issue coming up in September. As always, thanks for reading, and we hope to see you at one of our Cannabis Cups in 2017!

Stay well & stay high.

Nico Escondido

Chief Cannabis Officer

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Cannabis Convert

I'm 35 years old and have suffered from anxiety my whole life. I've been given five different anxiety medications over the past year, all of which have had horrible side effects, including depression. I've only been using cannabis for the past three months, and it has changed my life entirely.

I have always used alcohol to ease my anxiety and stress, but when the word "marijuana" was mentioned, I was against it from the start. When I finally ran out of options for what I was experiencing, I tried two different strains, both of which were recommended for anxiety, depression and stress. For the first time in a long time, I feel that I can live each day to the fullest with no side effects. But I am getting my medicine illegally: Sadly, I just got turned down for a medical marijuana card in Delaware.

Once again, I was completely against cannabis until this year. Now I finally understand how cannabis helps people in so many ways, whether it's medicinal or recreational.

There is a liquor store on every corner selling products that cause illness and even death. I'm just in shock that I can buy a bottle but was told that I can't legally use what helps me, makes my life more enjoyable and helps my work thrive.

*Matthew C.
Newark, DE*

Marijuana March

I appreciate all the efforts that *High Times* has made in support of our brothers and sisters who have lost their freedom over a God-given herb. I'm a 50-year-old male who has been a proponent of re-legalization since I was 16. I am fed up with the powers that be. I suggest that we pick out a date, march on our local justice centers and fire one up as a sign of civil disobedience. When we are ticketed or arrested—which would hopefully be at a number in the millions—we could all demand a jury trial. Imagine the number of years it would take to sort through the cases. Live free or die!

*Lee K.
Corydon, IN*

No Corporate Cannabis

Cannabis is unique in that it never needed fancy marketing and advertisements, celebrity endorsements or



"I was completely against cannabis until this year. Now I finally understand how cannabis helps people in so many ways, whether it's medicinal or recreational."

corporate funding to make it successful. Pot has been popular throughout the generations on its own merit, regardless of legal status. But now we're coming to a turning point. Some hail it as long overdue, something to celebrate, not realizing the monster that knocks on the door of legal marijuana. And that monster is big business. That monster is Monsanto or Pfizer or Bayer or Philip Morris salivating, waiting for these laws to pass so they can exploit a plant that has brought peace, pain relief, inspiration and artistic expression to so many. These companies have ruined our food, our water and the human mind. They've patented life itself. They're dangerous and pose a very real risk to our plant-friend as we know it.

What a triumph over the system that exploits and enslaves us if, as an industry, we said "fuck you" to corporate America. These people are evil, they're psychopaths, and they have no business in the marijuana industry—but it's up to *us* as marijuana growers, distributors and consumers to keep them out.

We have the power, and if we're prepared, we will be able to fight against

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this. So before Big Pharma and Big Tobacco and Big Corporate Asshole come around waving their big money covered in blood, let's be conscious of the criminality that we've overcome as united marijuana users in the last 20 years. Let's not hand our plant over to them.

Jenn

Opioid Relief

I really need information on the kinds of weed that can help people with opiate/heroin addictions. Someone I knew many years ago told me that he was addicted during the Vietnam War. The US Navy sent him to the Philippines; he couldn't get heroin there, but he could get cannabis. It worked for him. Anything that anyone has discovered about this would be helpful.

Ohio Jim

While there is very promising evidence that cannabis can help people kick an addiction to opioids—and while many US veterans report that they've been able to get off VA-approved painkillers with the help of herb—it's difficult to specify a particular strain for combating opioid or heroin addiction. You may have to try a few different varieties in order to find the strain that works best for you.

Pot Prices

I love the Trans-High Market Quotations section and usually find it very informative. But recently I've noticed that the prices for my area in THMQ are way above what I'm paying—or ever would pay—for pot. What's the deal? How do you get these numbers?

*Bill C.
Chicago, IL*

THMQ debuted in the very first issue of *High Times* in 1974, and it's the longest-running column in the magazine. The numbers are gathered entirely from reader submissions—and while efforts are made to remove any outlandish entries, we don't have the capacity to send *HT* representatives around the country to spot-check each submission's accuracy. If you feel your area isn't accurately represented, you can help us best by sending your own information on strain, location and price by the ounce to thmq@hightimes.com.



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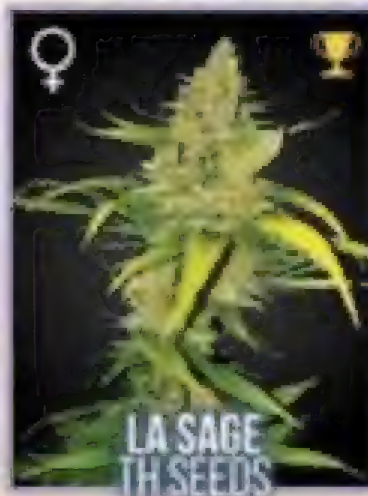
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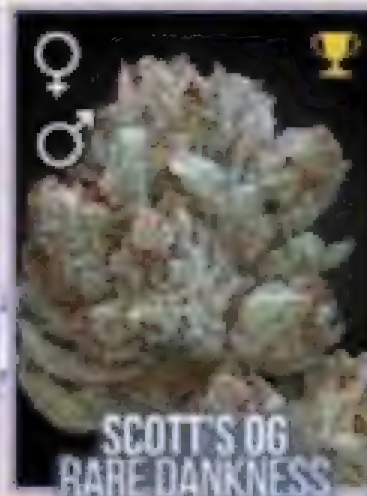
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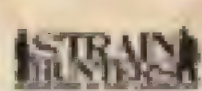
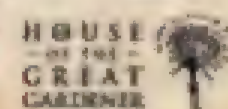
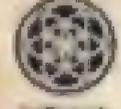
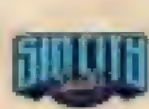
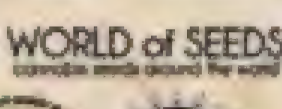
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High**

DREAM GARDEN Behold this epic roomful of mouthwatering, hydroponically-grown Dream Queen—a *sativa*-dominant cross of Blue Dream and Space Queen! Most cannabis cultivators can only dream of producing a garden of wall-to-wall weed like this Northern California grow. *Photo by Justin Cannabis*





SENSATIONAL NEW STRAINS Behold this enormous field of Dinafem's Amnesia cannabis strain growing under full sun in Morocco! Growing out large populations allows breeders to make better choices for future strain production projects. Learn more about the new auto-flowering feminized CBD-rich pot varieties being developed in Spain on page 68. *Photo courtesy of Dinafem*

**Contact
High**







July 2017 **High Times**

CLONING SUCCESS Healthy rooted cuttings taken from vigorous mother plants result in larger yields come harvest-time. Find out the cloning techniques, tips and tricks that jumpstarted this roomful of flowering buds on page 94. *Photo by Biksa*

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Highwitness News

Sir Patrick Stewart uses cannabis daily!



Style

High Fashion

CannaCentrix dips real pot leaves in gold, creating unique stoner adornments. p.30



Entertainment

Elysian

Jessica Renee Knight of post-punk group Elysian talks creativity and cannabis. p.34



The Buzzkill Continues

Conservatives are fond of invoking states' rights when the federal government stomps on their free-market dreams—but will they apply the same principle to defend marijuana? *By Mike DiPaola*

As more and more US states come over to the green side, it would appear that legal cannabis is here to stay. However, we should not assume that even the dankest states are safe from the clutches of reactionary buzzkillers. Case in point: Colorado.

Remember back in 2014, when Oklahoma and Nebraska, both on Colorado's borders, challenged the state's landmark cannabis law, skipping the preliminaries and appealing directly to the US Supreme Court? The High Court refused to hear the case, and the Rocky Mountain State remained free to pursue its happiness without interference from its

retrograde, nosy neighbors. Well, the neighbors are back.

Last year, Oklahoma and Nebraska glommed onto another legal challenge to Colorado's law, joining a group of sheriffs and other plaintiffs who are hell-bent on ending the green revolution. In January of this year, the case was brought to the 10th US Circuit Court of Appeals in Denver, where a three-judge panel heard oral arguments from the offended states. The gist of the plaintiffs' complaint is both simple and ridiculous: They argue that Colorado's legal recreational cannabis industry defies the federal law overseeing controlled substances and violates the

RICO statute against criminal racketeering.

We'd like to believe that this frivolous nonsense will be shut down—again—without further ado, but the attorney representing the cannabusinesses named in the lawsuit isn't so sanguine. "I went into the courtroom thinking that this was a slam dunk," said Matthew W. Buck, speaking to the *Denver Post* after the hearing, "and I came out of it thinking that it would be more of a toss-up."

The judges are now mulling over the arguments, as the legal cannabis industry and friends of the plant everywhere await their decision. The forces of evil are mostly law-and-order types—sheriffs' departments, attorneys general and the like—and they're supported by out-of-town interests, like the Washington, DC-based Safe Streets Alliance, a perennial fixture in many of these lawsuits.

It should be remembered that when

« Oklahoma and Nebraska filed their case with the Supreme Court, the Obama administration weighed in, arguing that Colorado's nuisance neighbors had shown no actual direct injury that warranted the High Court's intervention. As US Solicitor General Donald Verrilli noted, "Entertaining the type of dispute here—essentially that one state's laws make it more likely that third parties will violate federal and state law in another state—would represent a substantial and unwarranted expansion of this court's original jurisdiction." (The Supreme Court agreed, 6–2, with the ghost of Antonin Scalia abstaining.)

Can we expect this kind of hands-off approach from the current administration? Nobody knows what the celebrity-apprentice president will do. We do know that he has appointed an anti-pot dingus as his attorney general. We don't know much about the views of Neil Gorsuch, Trump's Supreme Court nominee, on marijuana-law reform (though, coincidentally, he comes from the very Court of Appeals now deciding this latest suit). We do know that one of the dinosaurs who tried to harsh Colorado's mellow in the first place was Scott Pruitt, then the attorney general of Oklahoma, who happens to be Trump's pick to head the Environmental

God only knows what this crackpot kakistocracy will do to the environment, let alone our hard-fought rights to blaze.

Protection Agency—an institution that Pruitt has spent years trying to undermine. God only knows what this crackpot kakistocracy will do to the environment, let alone our hard-fought rights to blaze.

The irony here is that Pruitt has made a career out of defending states' rights—to implement their own industry-friendly environmental regulations, for example—but he takes a dimmer view of state sovereignty when it involves something he doesn't like, such as cannabis. Not for nothing, but one of Pruitt's last acts as the Oklahoma AG was to try to sabotage the state's ballot initiative for medical marijuana by rewording its language to make it appear that voters were deciding on recreational weed.

While there is some anxiety in the cannabis industry right now—no one knows how the new administration will reconcile the current idiotic federal law on pot with conflicting state laws—there is nevertheless confidence that ganja has become just too big to fail. In 2016, Colorado racked up \$1.3 billion in sales. By 2020—ahem, a presidential-election

year—the cannabis industry is expected to generate more jobs nationwide than the manufacturing sector.

Now comes California, the world's sixth-largest economy, about to embark on the largest legal-cannabis regulatory scheme ever. It is hard to imagine that politicians—particularly those who pride themselves on keeping government out of business—will be very enthusiastic about threatening a multibillion-dollar industry that has only just emerged and is brimming with the potential for economic growth.

And there is some good news out of Washington as well. A Congressional Cannabis Caucus was just launched by four members of Congress—two from each side of the aisle, and all from rec-legal states. The good congressmen's objective is simple: to protect and preserve the nascent pot industry.

That said, we should not kid ourselves into complacency. The forces of evil might be a dwindling demographic, but they are real and well-heeled—and persistent. ✱

HIGH FIVE

Say What?!

Politicians and pundits are saying a lot of stupid stuff about marijuana in 2017. *By Mark Miller*



Butch Otter

"Idaho is a virtual island of compliance [with federal pot prohibition] and we are paying the price," Ohio Governor C.L. "Butch" Otter wrote to President Trump, coming off like a spineless sycophant. Numerous politicians and private business interests alike are pleading with Trump to lay off the burgeoning billion-dollar bud industry. But not Otter, who encouraged the Donald to crack down to prevent pot from being imported into potato country.



Peter Hitchens

"Marijuana use is a victimless crime—only if you do it on a desert island, quite alone, and nobody loves you." That shamelessly unsolicited advice came courtesy of Peter Hitchens, conservative journalist and author of biased books like the anti-pot tome *The War We Never Fought*. Hitchens's inane comment was part of a longer diatribe, "Stupid Arguments for Drug Legalisation Examined and Refuted," blogged at the UK trash tabloid *Daily Mail*.



Tom Wolf

"We have a \$3 billion [state] deficit, so [marijuana legalization] is not going to help," Pennsylvania Governor Tom Wolf flipperly declared on radio station KDKA. Wolf was addressing the state auditor general's report, issued a day earlier, that wisely advocated for the legalization of recreational pot, which would generate at least \$200 million annually—the tax revenue from which would surely benefit the cash-strapped Keystone State.



Hugh Hewitt

"One [federal] RICO prosecution against one marijuana retailer in one state that has so-called legalization ends this facade," opined the arch-conservative radio host Hugh Hewitt on his March 9 show, practically begging his guest, US Attorney General Jeff Sessions, to pursue an anti-racketeering strategy to take down legal-pot states. Sessions, a weed-hating drug warrior, had to inform Hewitt that battling the growing ganja industry is much more complex than a single case.



Peter Kilmartin

Rhode Island Attorney General Peter Kilmartin displayed some twisted logic during a press conference aimed at displaying "united opposition" to a state recreational pot bill sponsored earlier this year, explaining that legal cannabis in Rhode Island wouldn't eliminate the "black market... all you need to do is look at cigarette sales in the state." Thus did Kilmartin glibly ignore not only the harms caused by pot prohibition, but also the benefits of regulation.

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Dank Donation

Somewhere in Washington State, a stoner is incredibly bummed... either that or incredibly generous.

Earlier this year, five large plastic bags containing a total of 3.75 pounds of pot were discovered in a donated cooler at a Goodwill outlet in Monroe, Washington. The local police, called in to confiscate the presumably forgotten pot, tried to track down the cooler's owner but were unable to determine if it was originally donated at the store or at a Goodwill trailer nearby.

Numerous people on social media have claimed to be the source of the gifted ganja, but no one has yet attempted to reclaim the pot from police. That's probably wise: Although recreational marijuana is legal in Washington State, individuals can possess no more than an ounce of flowers at any one time. The cooler full of cannabis contained *60 times* the legal limit.

Marijuana Recall in Oregon

In March, the Oregon Liquor Control Commission issued the state's first-ever recall of recreational cannabis due to the excessive pesticide levels detected in retail flowers sold at the Buds 4 U pot shop in Mapleton.

The Liquor Control Commission, which oversees Oregon's recreational pot sales, confirmed that tested samples of the strain Blue Magoo, a clone-only, *indica*-dominant hybrid of DJ Short Blueberry and Major League Bud, failed the threshold for pyrethrin levels. Pyrethrins are synthetic chemical compounds used to kill insects that harm plants.

Emerald Wave Estate in Creswell, Oregon, cultivated the recalled weed. Buds 4 U sold over 80 grams of Blue Magoo to 31 customers in early March. The shop fully cooperated with the recall and, in fact, had notified the Liquor Control Commission immediately when the staff first noticed the failed pyrethrin-level reading in Oregon's Cannabis Tracking System.

POT PATIENTS SURGE IN CANADA



It appears that progressive leadership in government increases medical marijuana use. That's what occurred in the United States under former President Barack Obama, and now it's happening in Canada with the Liberal Party's ascent and the leadership of Prime Minister Justin Trudeau.

According to new data, the number of Canadian pot patients has quadrupled in just over a year. The month prior to Trudeau's election in October 2015, Canada boasted 30,357 registered medical cannabis users. By December 2016, that number had soared to 129,876. Industry experts believe that increased knowledge and a better understanding of cannabis among Canadian physicians and patients alike have contributed to the rise of legal pot users.

Technology has also played a role: The messaging app Skype has improved access to medical marijuana in Canada, allowing registered patients to obtain pot prescriptions online, then have their medicine delivered safely and anonymously through the mail.



The Green Knight

Legendary star of stage and screen Sir Patrick Stewart recently discussed his use of cannabis to treat symptoms of arthritis in his hands. Stewart, 76, hasn't opened up about smoking pot, but he did elaborate on his reefer regimen; he uses cannabis-infused rubs, sprays and edibles to relieve his pain and help him sleep.

"Two years ago, in Los Angeles, I was examined by a doctor and given a note which gave me legal permission to purchase, from a registered outlet, cannabis-based products, which I was advised might help the ortho-arthritis in both my hands," Stewart told the *Telegraph*. Since then, the actor has seen great improvement in his symptoms without any of the adverse side effects associated with over-the-counter anti-inflammatory medicines. The experience led him to endorse an Oxford University program aimed at studying the therapeutic benefits of pot—the UK's first such effort.

The medical cannabis movement is gaining ground in the UK—polling suggests 58 percent of people support legalizing marijuana as medicine. And Oxford University's £10 million study on cannabis could go a long way toward a national medical pot program.

What can't this plant do?!



Hemp Heals

Farmers in the coastal city of Taranto in Southern Italy are currently cultivating hemp to decontaminate the farmland soil ruined for raising livestock by toxins like the chemical dioxin, which have been discharged by a local steel plant.

The cannabis that these farmers are growing contains very little THC and has the ability to leach the soil naturally through a process known as phytoremediation, in which the rapidly growing roots of pot plants bioaccumulate, degrade or otherwise render harmless toxic heavy metals.

Hemp is a part of everyday life in Italian towns like Taranto, where cannabis grows openly and apartment buildings are constructed with hemp biomaterials. The farmers' removal of the steel plant's contaminants via hemp is akin to the use of cannabis to help clean up the radioactive debris at Fukushima, Japan, in the wake of the 2011 reactor disaster and in Ukraine after the 1986 Chernobyl meltdown—albeit on a smaller scale.



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Anti-Pot Governor to Chair Opioid Commission

This spring, Donald Trump announced the formation of a White House commission to combat opioid and heroin addiction, to be headed by New Jersey Governor Chris Christie. The panel will fall under the umbrella of the president's new White House Office of American Innovation, headed by Trump's son-in-law, Jared Kushner.

Christie will coordinate with state and local governments as well as law enforcement, medical professionals and even addicts themselves to develop strategies to curb the epidemic that is causing the deaths of 91 Americans each day, according to the Centers for Disease Control.

The best that Trump could muster in support of Christie—one of his earliest and smarmiest supporters—is that he's a “very effective guy.” But Christie has been anything but effective as New Jersey's governor, especially when it comes to his administration's continued stonewalling of the state's medical marijuana law—which is particularly appalling given that recent studies have shown a dramatic decline in opioid deaths in states with legal marijuana.

Appearing on *Good Morning America*, Christie could only offer a vague promise to “help” the Centers for Disease Control free addicts from the chains of opioid addiction.

Christie was appointed to the panel the same day that two of his former aides were sentenced in the Bridgegate scandal, in which Christie's staff and appointees colluded to intentionally create traffic jams in Fort Lee, New Jersey, as political retribution against the city's mayor, who refused to support Christie for re-election. Trying to block opioid addiction won't be as easy for the governor, now serving his final year in office.

LA APPROVES NEW DISPENSARY RULES



Los Angeles voters overwhelmingly approved Measure M earlier this year with 80 percent of the vote. The City Council-sponsored ballot initiative seeks to bring regulatory harmony to the LA cannabis industry.

Measure M repeals Proposition D, the odious 2013 initiative that set a limit of 135 medical marijuana dispensaries in the sprawling metropolis and banned new businesses from opening. The new measure will allow the city to license and regulate dispensaries and help the transition to recreational cannabis sales coming up next year. Under Measure M, the City Council will determine the number of pot shops allowed to operate in Los Angeles. That total appears set to expand, and the council will likely approve delivery services as well.

Measure M, which was backed by both the city and cannabis-industry trade groups, also imposes a 10 percent tax on recreational weed and a 5 percent tax on medical marijuana.



Marc and Jodie Emery Busted

The “Prince and Princess of Pot,” Marc Emery and his wife Jodie, who own the Vancouver-based Cannabis Culture brand, were arrested March 8 at Toronto International Airport while preparing to board a flight for a marijuana festival in Spain.

The following day, Toronto police conducted raids on several homes and seven Cannabis Culture dispensaries—five based in Toronto—which they characterized as “a large franchise operation of alleged high-level drug traffickers.” In all, the cops confiscated 65 kilograms—143 pounds—of pot, 2.4 kilos of marijuana extract and \$250,000 in cash.

Acting Inspector Steve Watts claimed that the amount of cannabis seized “can only be supplied by illegitimate sources often tied to organized crime.”

On March 10, the cannabis couple were released on \$30,000 bail each (along with three other staff members), but they're banned from possessing or using pot or any other drug unless it's prescribed, and they're also barred from being present at any Cannabis Culture store. Marc faces 15 drug-related counts including trafficking, while Jodie faces five similar charges.

“This is an injustice we are used to, and we will bear it well,” Marc promised after his release. “The government is trying to take the industry away from us.”

The Emerys' next court date is set for April 21.

Cop Block

Cops across California are livid over proposed legislation that would prohibit them from cooperating with investigations or raids by the federal government against legal cannabis businesses. Assembly Bill 1578 prohibits state and local police from using their funds, facilities or personnel to help a federal agency “investigate, detain, report or arrest” anyone acting in accordance with California's marijuana laws, unless there's a court order.

Kern County Sheriff Donny Youngblood, president of the State Sheriffs' Association, termed the bill “offensive” because it seeks to “direct law enforcement” according to how legislators “want us to work.”

The six Democrats in the State Assembly who co-sponsored AB 1578 view it as a way of defending the will of the people who passed Proposition 64, which legalized recreational cannabis in the Golden State last November. The legislation could establish California as a de facto “sanctuary state” for cannabis-businesses against DEA raids.





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Sprayground + High Times

Sprayground is making a splash with its latest collaboration: the Ganja Grillz backpack, created exclusively for High Times. The graffiti-culture skateboard style of Sprayground's unique line fits in perfectly with the High Times aesthetic: These backpacks are creative and functional, letting their wearers look chill while blazing up.

Sprayground founder and creative director David Ben-David says, "Partnering with High Times was inevitable. I've always appreciated the social and cultural significance that cannabis has had—and continues to have—in our society, and I advocate for its medicinal and recreational use. When the opportunity for a collaboration arose, I jumped at the chance to help alter people's perception and connotation of marijuana in an artistic way."

The Ganja Grillz backpack features an eye-popping take on Sprayground's famous "grillz" concept: A gold-and-diamond-encrusted mouth nestles into a cornucopia of cannabis strains, an homage to the hustlers and ganjapreneurs that helped the cannabis industry rise up. Check out the limited-edition Ganja Grillz and other upscale backpacks for the cannasseur at sprayground.com.



Golden Ganja

CannaCentrix captures the beauty of real cannabis leaves by transforming them into jewelry. Each leaf is delicately preserved in precious metal—either 18- or 24-karat gold—and fashioned into earrings and pendants for the well-heeled weed lover. No two leaves are ever quite the same, so each piece is unique. The jewelry comes in a luxurious black piano-wood box with an authenticity card noting the strain that each leaf was plucked from.

\$125 to \$300, cannacentrix.com



sPOTLIGHT

The Nuggy

This multi-faceted tool is a Swiss Army knife for pot smokers, consolidating 10 different accessories into a single handy case. Each stainless-steel tool is held in place by a spring-locked system, and the whole unit fits comfortably into your pocket. NugTools, the company behind the Nuggy, used 3-D printing to create the prototype, then fine-tuned the details with mechanical engineering experts—and, we're sure, feedback from pot smokers.

The Nuggy contains a flashlight, bottle opener, flathead screwdriver, scraper, pick, roach clip, scissors, tamper, tiny spoon and, of course, a knife. What more could a weed lover need? We'll soon find out: NugTools plans on rolling out a version with even more accessories, and in a range of colors, later this year. **\$33, nugtools.com**



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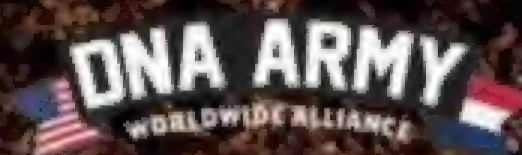
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"If I take a hit from a vape pen, I find it helps me absorb the music 300 percent better."

during this quiet transition. There *may* have been some weed smoked—at least by me—and I grabbed the mic and completed the lyric with 'Been you to have any spliff, man?' So, yeah... 'Antelope' definitely has roots as a pot song!"

Even though Phish's songbook is filled with far-reaching references to weed, Marshall admits that cannabis doesn't necessarily help with his craft. "Weed lends itself to listening," he explains. "Like at Phish, if I take a hit from a vape pen, I find it helps me absorb the music 300 percent better and get totally tuned into what's happening onstage. With writing, I find getting high distracting. It heightens the thought centers in my brain—just not the right ones."

Even now, as we sit with an impressive array of concentrate containers spread out before us, samples from the Cannabis Cup, Marshall can't believe he's being interviewed for *High Times*. "I remember liking the magazine as a kid and, knowing that it was off-limits, I remember iconic covers like Bob Marley and Dylan, looking at the centerfolds and all these jaw-dropping amounts of pot... I always wondered: Would I get there one day?"

Well, Tom, you did. And now there's only one thing left to do, and that's to blaze on! ✨

Tom Marshall Blazes On

Crazy bits of happenstance continue to trail the Phish songwriter and his high-school best bud, Trey Anastasio. *By Jen Bernstein*

Phish have been around for 30-some years, and whether you're a noob or a Phishto-rarian, chances are that you've heard of Tom Marshall, the man behind the jam-band's songs. With more than 200 credits under his scales, Marshall has shared principal songwriting duties with lead guitarist Trey Anastasio since the two were teenagers.

When Phish's 13th studio album, *Big Boat*, set sail last summer, a track called "Blaze On" found itself smack-dab in the middle of the album. While its 4:20 running time is a wink to stoner culture, the song's title was conceived as a reference to a comet "blazing by" while Anastasio and Marshall were at a writers' retreat.

Synchronicities have followed Marshall and Anastasio since their teens, and made their way into Phish's lyrics. "Right away, we took an off ramp from the standard high-school band and got into writing our own music," Marshall says. "We really knew how to push each other's laugh buttons!"

The earliest of these private jokes were penned during ritualistic hangs at the Rhombus on the campus of the Institute for Advanced Studies, where Marshall and Anastasio could often be found climbing, dangling from or drumming on the sculpture. A typical night would start with beers and, occasionally, weed, before the group trekked across a field, guitars in hand, to the Rhombus.

Marshall and Anastasio would meet up again by coincidence a few years later. They immediately made their way to Anastasio's father's house to set up a studio.

"We hammered up rugs on the wall, had a really cool tape deck and just went nuts recording all this really amazing stuff Trey had written," Marshall recalls. "One night, while recording 'Run Like an Antelope,' Trey pointed to an open mic and said to say something



Chocolate Cravings

Marshall has an extreme weakness for chocolate. "When I'm stoned, it's ice cream," he tells *HT*. "Any chocolate ice cream is my favorite. Phish Food is my absolute go-to. Turkey Hill has a new flavor called Double Dunker... you'll thank me later."

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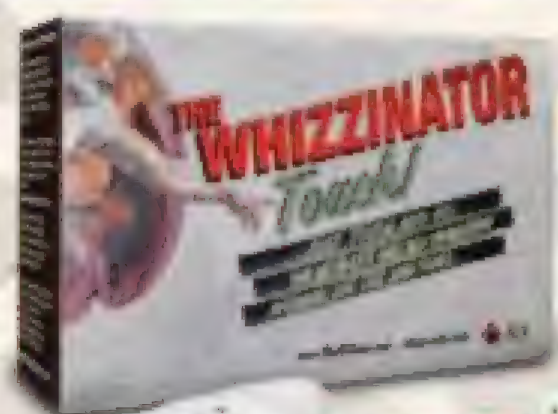
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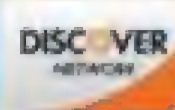


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Vision thing: Knight looks beyond her next drag.

DarkS entries

Elysian are the newest champions of noirish post-punk. *By Polly Watson*

They've been a band for just over a year, but Atlanta- and New York City-based Elysian have already generated underground hum with their riveting live performances and a raw, buzzy demo tape. Accurately described by Big Peach paper *Creative Loafing* as “spooky and dope,” the band’s music recalls early-’80s post-punk pioneers Xmal Deutschland, or a female-fronted version of German darkwave progenitors Pink Turns Blue, and stands alongside the work of modern torchbearers like Belgrado and Anasazi. Elysian’s arresting visual aesthetic draws from this same era, and from vocalist Jessica Renee Knight’s freely professed love of Art Deco and its immediate predecessor, Art Nouveau.

Knight, who hails from

Orlando, FL, was living in Atlanta when she connected with guitarist Tony Kozera, bassist Sara Slick and drummer Ryan Fetter. Within five months, the band’s demo was out; within eight, they were playing San Antonio’s edgy San La Muerte fest; within nine, Slick had left the band and Knight had moved to New York.

“At first, it was a little overwhelming,” she acknowledges. It’s 1 a.m. on a Thursday in Manhattan, and she’s gracefully sprawled next to Kozera and Fetter in a corner of an art gallery above Home Sweet Home, where Elysian have just finished playing a fog-drenched set at the weekly “Nothing Changes” party, which draws devotees of experimental, industrial and

various breeds of wave (new, dark, cold) from all corners of the city. “But I got it now,” she adds. “If anything, there’s more inspiration here.”

Knight is going to need that inspiration, because Elysian are writing a full-length album, which they’re slated to record this fall, right after their debut seven-inch comes out on Atlanta’s Deanwell Records. Kozera explains how it’s going to work: “The plan is that Jenna [Rose, bass player in the goth-punk outfit Pawns] and Jessica can write in New York and send stuff to me and Ryan in Atlanta, and we can bounce it off each other.” Kozera describes their previous songwriting process as “very inclusive of all the

“I don’t really see [weed] as a drug. It helps a lot with mental illness for me, and with physical ailments. I think it’s great.”

band members” but says he’s confident the new arrangement will work.

Elysian plan to return to San La Muerte this summer and hope to branch off to Mexico and the West Coast. With Knight busy cutting hair in New York and Kozera and Fetter each playing in multiple bands down south, they’ve learned to maximize whatever little time they can scrape together.

They’ve also learned to maximize their weed intake when appropriate. Though Fetter is essentially straight-edge, Knight says that weed helps her with everything from social anxiety to fibromyalgia. “I don’t really see it as a drug,” she states. “It helps a lot with mental illness for me, and with physical ailments. I think it’s great.”

Says the Atlanta-born Kozera, “I come from a culture where weed is life. I was away from it, but I’ve recently come back—I’ve found it can help my stomach.”

“Help it get bigger?” Fetter quips. Kozera fake-swings at him, and then a beefy security guard kicks us all out of the gallery and onto the black, early-morning streets. A few bright cabs loiter outside, but Elysian troop back into the hazy little club to soak up the last few hours of darkness before dawn. ✱



Looking Daggers

Knight does her own makeup. “I grew up inspired by ’70s and ’80s horror movies,” she says. “When I have to do my show makeup in the van, it’s difficult, but I’m getting better—I’ve learned to bring scotch tape everywhere!”

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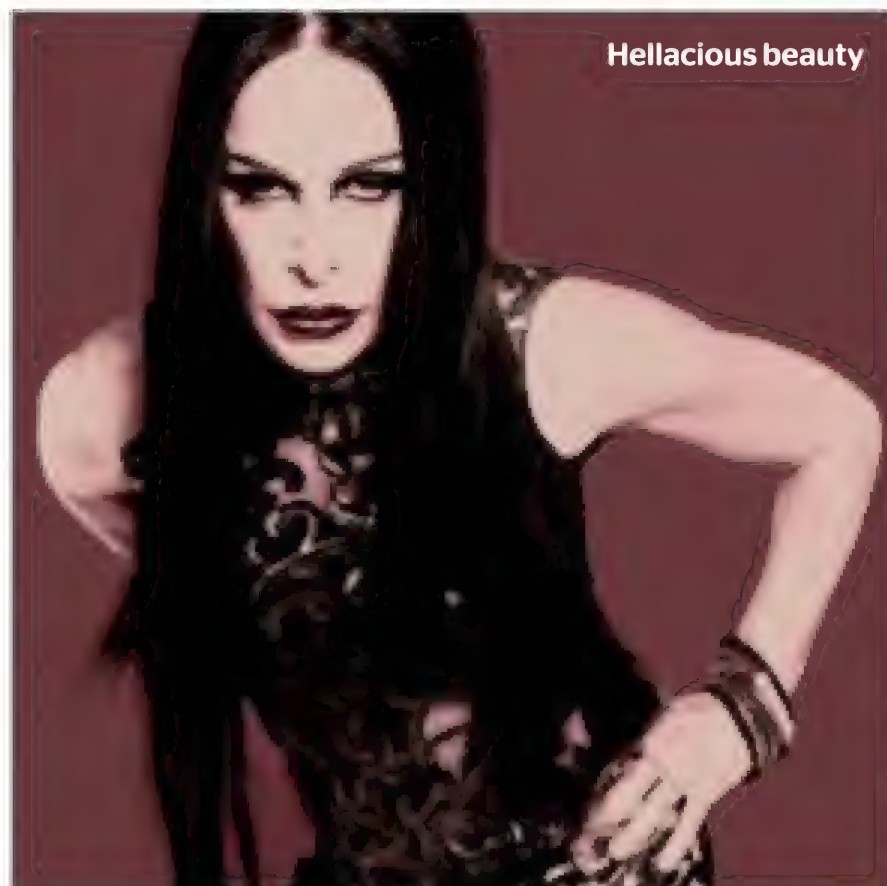
We are one of the most decorated seed companies in the world, with a trophy cabinet full of cups and awards. We have been supplying happy customers with seeds for over 20 years and they keep coming back because when they buy Paradise, they buy quality.



PREMIUM STRAIN COLLECTION



Paradise Seeds Genetics give great results, as seen on the picture above of Daya Foundation's huge plantation, a licensed medical cannabis producer in Chile.



Songs From the Underworld

On two thrilling records, Diamanda Galás plumbs the depths of jazz, pop, country and death.

Greek-American singer-pianist DIAMANDA Galás is a provocateur whose virtuosic music and words stake a bloody claim on crucial matters that some of us might lack the will to consider. Deeply felt, immaculately researched and technically sensational, her intriguing point of view has included sacrilegiously alternative ideas about the Armenian, Assyrian and Anatolian Greek massacres of 1915 and 1922, the AIDS crisis, the connection between multiphonic vocal techniques and sadomasochism, and how her music—and ours—were irrevocably blitzed by the likes of Friedrich Nietzsche and Doris Day, Ornette Coleman and Franz Liszt, Screamin' Jay Hawkins and Led Zeppelin's John Paul Jones.



Diamanda Galás

All the Way and At Saint Thomas the Apostle Harlem (Intravenous Sound Operations)

Two new albums bring us up to date on Galás's startlingly individual path. *All the Way* collects interpretations of revered standards from the jazz, pop and country realms, including "Pardon Me I've Got Someone to Kill," "The Thrill Is Gone" and Ralph Stanley's timeless "Oh Death." Galás's prodigious vocal instrument turns the dark underbellies of these tunes inside-out but can't quite eclipse the thrilling originality of her piano playing, a gift that soars on her instrumental warping of Thelonious Monk's "Round Midnight."

At Saint Thomas the Apostle Harlem documents Galás's 2016 performances at the church/performance space in New York. Comprising entirely what Galás calls "death songs," these concert-exorcisms include probings of poems by Cesare Pavese and Ferdinand Freiligrath and songs by Jacques Brel and Albert Ayler. *John Payne*

MUSIC RECOMMENDATIONS



Brian Eno
Reflection
(Warp)

➤ Brian Eno has experimented with ambient soundscapes for more than 40 years. His new generative piece is a single 54-minute track that evokes the contemplative calm of watching a river flow. The slow, deliberate pace of *Reflection* creates a space for deep internal thought. Eno's

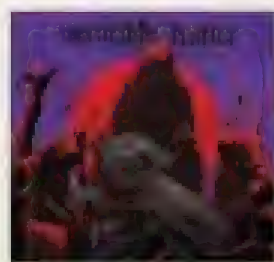
original intent with his ambient explorations was to create music that could go on forever while always unfolding differently. If you purchase the *Reflection* app, you'll be treated to an endlessly changing piece of music that flows beyond the constraints of a fixed album format. *Ira Lawrence*



Future Islands
In the Far Field
(4AD)

➤ Future Islands have spent a decade crafting an impeccable sound that fuses punk caterwauling with epic Neil Diamond-style songwriting. With *In the Far Field*, the band has scrapped the rough edges, instead favoring billowing orchestral arrangements crossed with dreamy synth undertones.

The album is packed with infectious rhythms, from the staccato drumming of "Day Glow Fire" to the propulsive "Shadows," a fantastic duet between lead singer Samuel T. Herring and Blondie's Debbie Harry. *In the Far Field* is a solid addition to Future Islands' righteous discography. *Tommy Smith*



Unearthly Trance
Stalking the Ghost
(Relapse Records)

➤ After splitting up in 2012, Unearthly Trance have returned with their first album of new material in seven years. *Stalking the Ghost* is a thick, syrupy stew of sludge-crusted stompers like "Into the Spiral," "Dream State Arsenal" and epic nine-minute centerpiece "The Great Cauldron,"

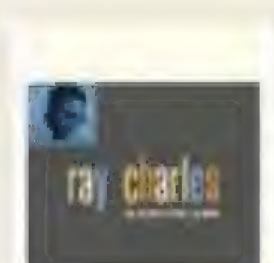
while atmospheric closer "In the Forests Keep" is a mostly instrumental track featuring a spoken-word rumination on the origins of a human skull found in the woods near a friend's home. (True story.) Spooky experiments like this propel Unearthly Trance above the mediocre doom masses. *J. Bennett*



The Obsessed
Sacred
(Relapse Records)

➤ On their first album in 23 years, Maryland doom-dealers the Obsessed prove impervious to the passing of time by delivering material worthy of their lofty reputation. With a revamped lineup led by founding guitarist/vocalist Scott "Wino" Weinrich, they kick off *Sacred* with a muscular redux of

"Sodden Jackal" from the Obsessed's 1983 debut single and then proceed to rip, roar and guitar-harmonize through streetwise rockers ("Punk Crusher," "Perseverance"), infectious power anthems ("Stranger Things") and sprawling slow-mo blues workouts ("On So Long"). Come get some. *J. Bennett*



Ray Charles
The Atlantic Years—In Mono
(Atlantic/Rhino)

➤ Blending bent blue notes and gospel spirituality with jazz swing and technique, Ray Charles invented soul music in the 1950s. This box of seven early, powerfully monophonic LPs is proof that the world got a lot hipper and more sophisticated by the

mid-20th century thanks to Brother Ray. In addition to hits like "What'd I Say" and "Lonely Avenue," there are two instrumental albums, wherein said genius caresses the piano keys amidst a pensive 3 a.m. vibe—a perfect soundtrack for smoky cannabliss. *Michael Simmons*

PRODUCT OF AMSTERDAM

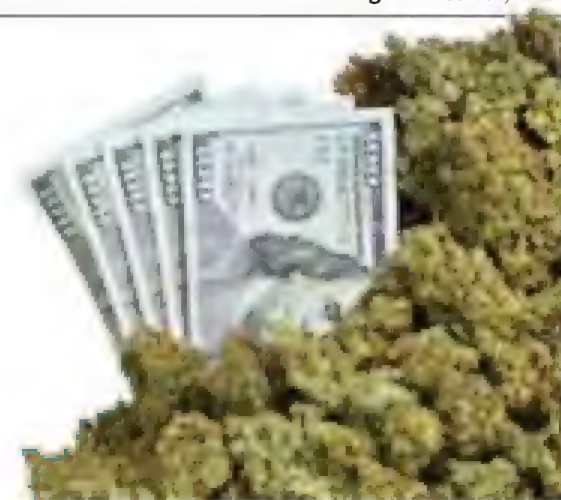
SIMPLY HEMP.



So You Want to Be a (Legal) Cannabis Entrepreneur?

Once illicit, the marijuana industry is now highly regulated and non-compliance is met with penalties.

John Kagia is executive vice president of industry analytics for New Frontier Data



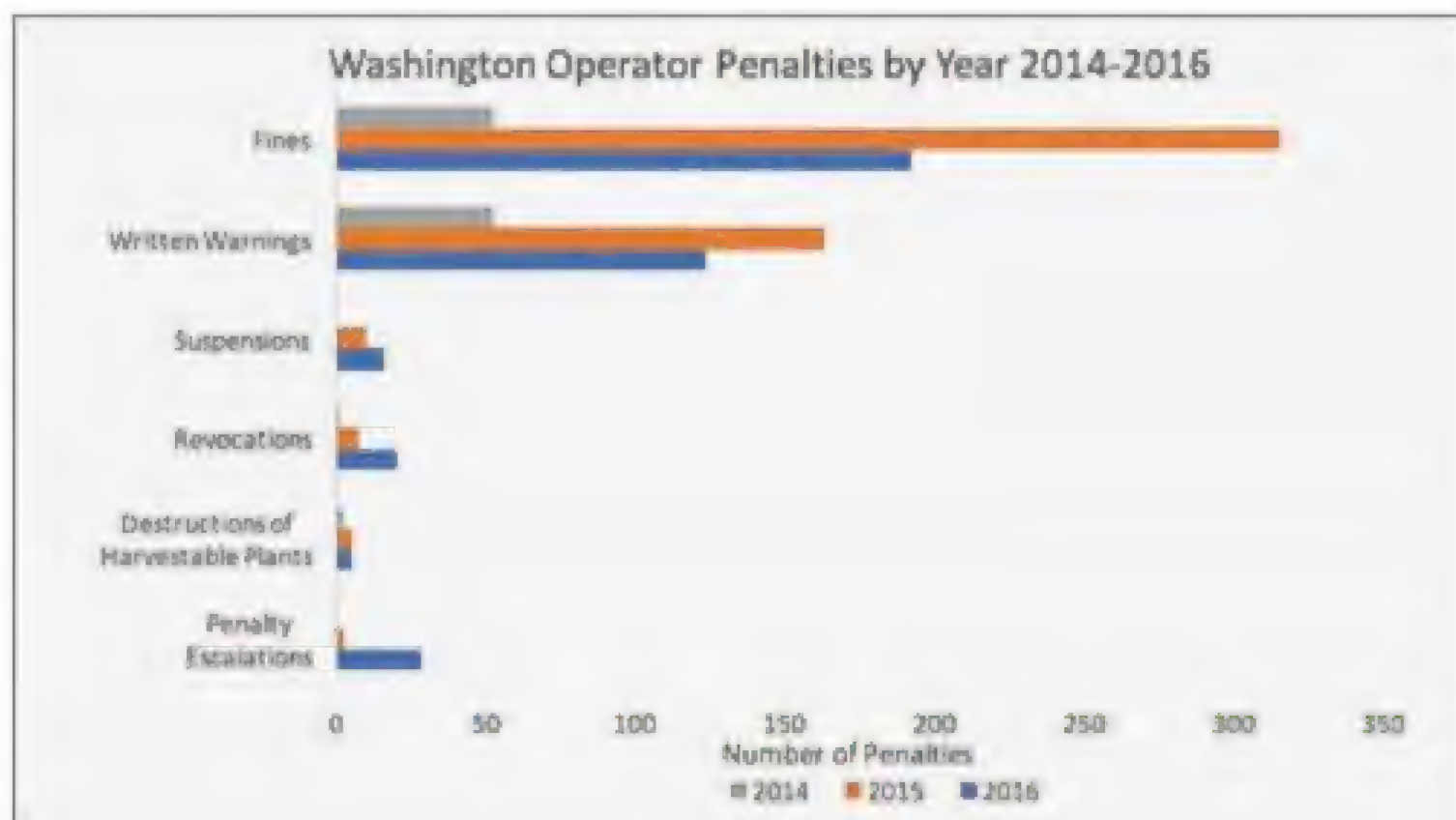
IT'S AN EXCITING time to be in the burgeoning cannabis industry, where timing and positioning are key and the establishment of a brand can be essential for long-term survival and success. Sharing some similarities with both the repeal of alcohol prohibition in 1933 and the Internet boom of two decades ago, the cannabis industry is nevertheless unique unto itself—inviting comparisons to the spirit (and risks) of the Wild West, yet also demanding an aptitude and appreciation for technical complexity. It is a place for neither fools nor the faint of heart to tread.

The fact is that, as the cannabis industry moves fully out of the shadows, it is establishing itself among the most highly regulated business environments in the world, on a par with financial services, gaming and health care in terms of depth and complexity within the regulatory framework.

Not only are cannabis businesses subject to state licensing and regulatory requirements, but their stakeholders must adhere to city, county and federal regulations and authorities as well. Cannabis compliance can be a highly complex endeavor, subject to many pitfalls. If a business is noncompliant from a regulatory perspective, it risks losing its hard-earned privilege to operate, while facing stiff fines, penalties and probationary actions that threaten to handicap it at the very time that it seeks to bloom in the marketplace.

Compliance, in short, is imperative for survival. A look at nationwide compliance rates during 2016 found that cannabis businesses fell short of meeting many of these requirements, which cover a host of areas, including inventory and financial, security and surveillance, required business records, public safety, and others.

The most compliant state last year was Illinois, where cannabusiness operators averaged the highest relative scores in the nation: 97 out of 100. Such results might be attributed to the fact that Illinois regulators conducted more



inspections per business than any other state with a legalization program. Due to intense regulatory scrutiny going forward, Illinois's cannabusinesses simply cannot afford to be noncompliant.

Conversely, the least compliant states were Washington and California: Businesses in those states averaged more than 16 compliance infractions per inspection. The Washington and California markets have been largely unregulated since their inception.

How do marijuana businesses fail? Adherence Compliance, a provider of compliance software, partnered with New Frontier Data to find out. Based on the frequency of occurrence for all inspection types, the top infractions across 15 categories that Adherence Compliance monitors include the following:

- **76% Inventory and Financial:** Includes failure to reconcile all inventory on hand at the close of the business day, and over-/underreporting inventory in the state's traceability system.
- **72% Security and Surveillance:** Includes failure of security systems to have an unobstructed view of all activity on the premises, or failure to maintain a current list of all employees and service personnel with access to the premises.
- **67% Labeling, Packaging and Product Safety**
- **64% Business Records Required**
- **53% Transport and Storage**

For states with previously unregulated markets, new compliance requirements can prove to be very difficult to incorporate into current business practices. The inspection data from Adherence Compliance highlights how businesses in such states score lower when compared to states with new markets. For states starting fresh, compliance scores are dramatically higher than in states with previously unregulated marijuana sales.

Since the 2014 implementation of its adult-use program, Washington has assessed various penalties for failure to comply with cannabis production, processing and sale regulations. Written warnings and fines peaked in 2015 but declined in 2016, whereas the numbers of penalty escalations, suspensions and revocations all increased in 2016. The trend lines suggest that warnings and fines in the first two years of operation led many businesses to correct early mistakes, but that regulators' patience waned by the third year, as they began targeting repeat offenders more aggressively with increasingly severe penalties for subsequent offenses.

The message to entrepreneurs, in other words? Fool them once, shame on you; fool them twice, it will cost you; fool them three times, and you probably should start looking for another line of work. ✨

BATTLE OF THE BASE NUTRIENTS PH SHOOTOUT



*Advanced
Nutrients*
VS.
General Hydroponics

Dear Big Bud Grower,

For years, we've been telling you about Advanced Nutrients' pH balance-free base nutrients with pH Perfect® Technology and how it's the only state-of-the-art technology that balances your pH for you, and holds it in marijuana's "bud growing sweet spot" for a minimum of one week.



*Advanced
Nutrients*
VS.
House & Garden

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Now, we'd like you to see the proof! We put pH Perfect Base Nutrients and supplements head-to-head against all the other top hydroponics brands and filmed it live for you.



*Advanced
Nutrients*
VS.
Botanicare

We setup three diverse pH ranges of 4.5, 6.5, and 8.5 – then tested all the top brands against Advanced Nutrients to answer the ultimate question ...



*Advanced
Nutrients*
VS.
Canna

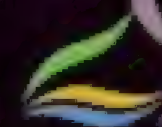
Does pH Perfect Technology really work?
And how does it stack up against the competition?

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2

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3

GIRL SCOUT COOKIES

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4

BLUE DREAM

\$320

5

HAZE

\$337

(Querkle)
"The black market still dominates around here."
-Ridgway, CO

(Gorilla Glue #4)
"Beautiful, dense, sticky, stinky nugs."
-New York, NY

MARKET ANALYSIS

Prices by the ounce

All indices, with the exception of the Southern Index, finished July above their previous month's average. The US Price Index jumped \$12 from its June average to reach its highest average of the year so far (\$347). After reaching a year-high average in June, the Southern Index fell to \$366 per ounce, just \$3 above its YTD average.

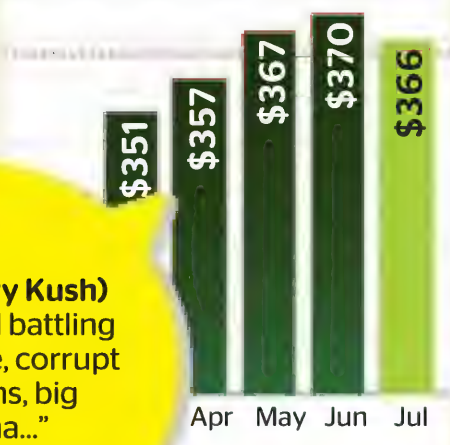
US Price Index
YTD Average: \$331



Eastern Index
YTD Average: \$352



Southern Index
YTD Average: \$363



Western Index
YTD Average: \$267



(Blackberry Kush)
"We are still battling bad science, corrupt politicians, big pharma..."
-Sydney, Australia

TRANS HIGH MARKET QUOTATIONS

STATE	CITY	STRAIN	PRICE
ALABAMA	Mobile	Blue Dream	\$380
ARIZONA	Phoenix	Platinum Purple Kush	350
CALIFORNIA	San Bernardino	LA Confidential	280
COLORADO	Denver Ridgway	Ghost Train Haze Querkle	260 150
CONNECTICUT	Hartford	Girl Scout Cookies	420
FLORIDA	Miami Orlando	Juicy Fruit Critical+	360 400
GEORGIA	Atlanta	Super Silver Haze	380
HAWAII	Kauai	OG Kush	400
ILLINOIS	Chicago	Blue Dream	360
INDIANA	Indianapolis	Blueberry	380
KANSAS	Topeka	Master Kush	375
LOUISIANA	New Orleans	SFV Kush	400
MAINE	Portland	Headband	330
MARYLAND	Baltimore	Northern Lights	380
MASSACHUSETTS	Boston Springfield	Space Bomb Blue Dream	360 320
MICHIGAN	Ann Arbor Detroit	Sour Diesel Chemdog	320 350
MINNESOTA	Minneapolis	East Coast Sour Diesel	380
MISSISSIPPI	Oxford	Tahoe OG	400
MONTANA	Helena	Skywalker OG	320
NEVADA	Las Vegas	Space Queen	380
NEW JERSEY	Asbury Park Hoboken	OG Kush Three Kings	400 380
NEW YORK	New York	Gorilla Glue #4	400
NORTH CAROLINA	Charlotte	Green Crack	380
OHIO	Columbus	Blue Dream	360
OREGON	Portland	Mango	200
PENNSYLVANIA	Philadelphia	Grape Ape	350
RHODE ISLAND	Providence	Larry OG	380
TENNESSEE	Nashville	Vortex Cheese	350 300
TEXAS	Austin	Ghost Train Haze #1	360
UTAH	Salt Lake City	Guava Chem	350
VERMONT	Burlington	Bubba Kush	380
VIRGINIA	Richmond	G-13	375
WASHINGTON	Seattle	Goji OG	250
WISCONSIN	Madison	Death Star	380
INTERNATIONAL			
AUSTRALIA	Sydney	Blackberry Kush Hydro	AUD\$315 290
CANADA	Montreal Toronto	God's Gift Bubba Kush	C\$180 160
UNITED KINGDOM	London	Tangerine Dream	£180

High Times wants to know what you're smoking. Submit your strain information including location and price by the ounce to thmq@hightimes.com, or tweet us (#THMQ).

(Cheese)
"This stuff stinks up my whole damn house!"
-Nashville, TN

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E: homesteadbook@gmail.com

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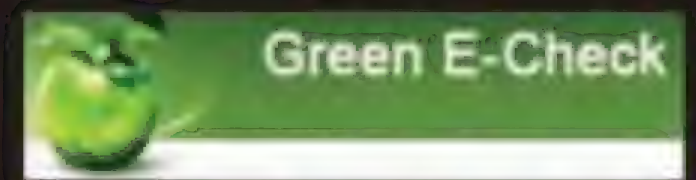
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TOTAL ENCLOSED: \$ _____

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2 fl oz • 25mg

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We put 100% focus on regulatory compliance on all processes associated with the importation and processing of raw hemp. We only use Non-Genetically Modified Organism (GMO) industrial hemp plants.

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Betting on Bud in Las Vegas

Despite unforeseen obstacles, the first-ever High Times Cannabis Cup in Nevada took place just outside Las Vegas on Moapa Paiute tribal land. *Story by Mary Jane Gibson, photos by Dale Shirley*



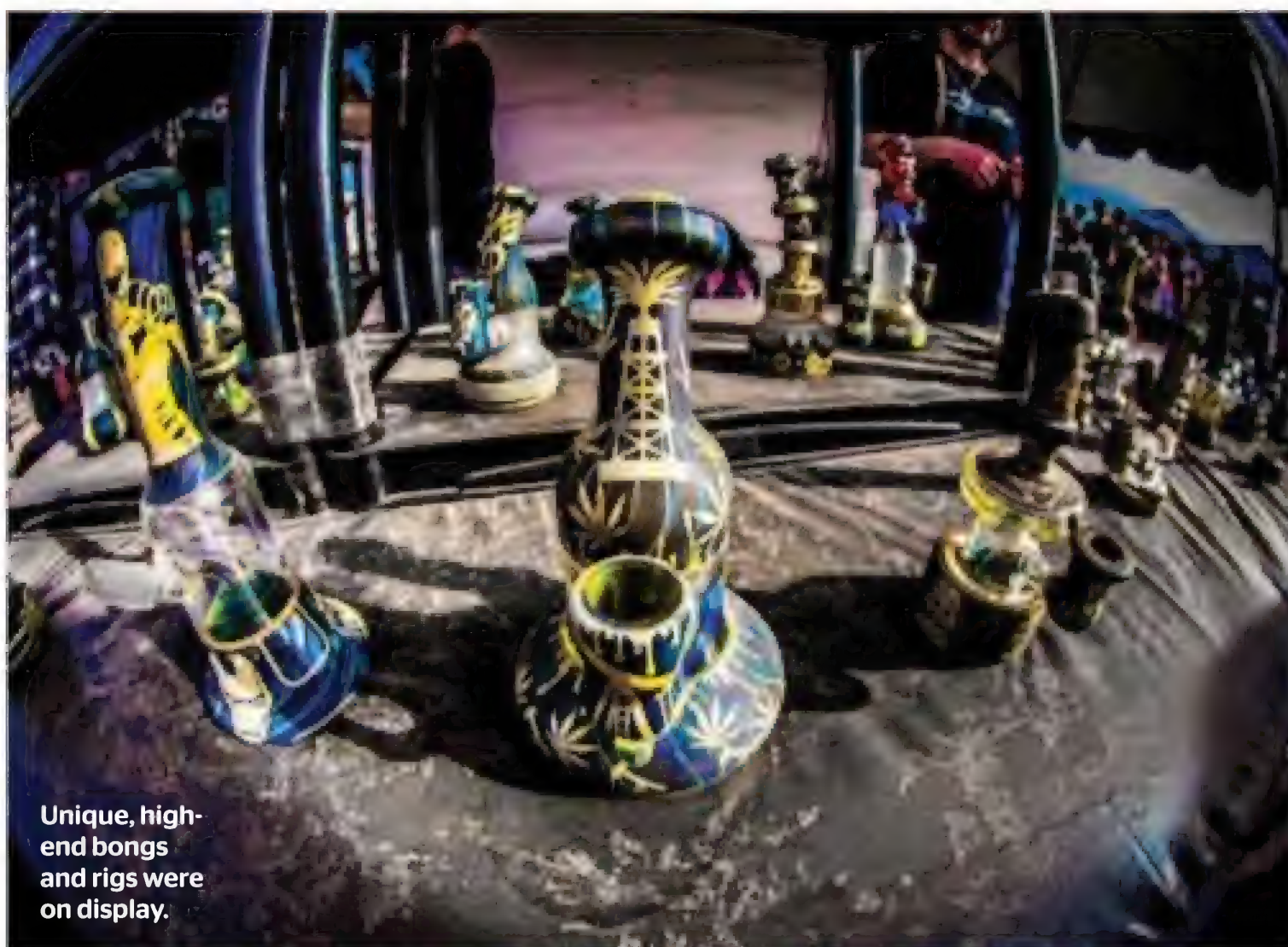
Loud Pack Jay hyped the crowd before the big show.



The Visionary
Village by
Higher Vision



Trippy artwork by legendary artist Alex Grey



Unique, high-end bongos and rigs were on display.

The Year of the Rooster is proving to be a challenging one on many levels. High Times experienced some cocky flexing from the Department of Justice under the fledgling Trump administration in the form of a sternly worded letter two weeks before the inaugural Las Vegas Cannabis Cup in March. Event organizers were onsite on Moapa Paiute tribal land when US Attorney Daniel Bogden, based in Las Vegas, issued a warning to the council. Bogden wrote: "I am informed that the tribal council is moving forward with the planned marijuana event... because it is under the impression that the so-called 'Cole Memorandum' and subsequent memoranda

from the Department of Justice permit marijuana use, possession and distribution on tribal lands when the state law also permits it. Unfortunately, this is an incorrect interpretation of the Department's position on this issue."

Of course, under federal law, cannabis is still a Schedule I drug, meaning that it has no accepted medical use and a high potential for abuse. Cue the laugh track. But it's not funny, and it's not going to get better under Donald Trump's new attorney general, Jeff Sessions, who sanctimoniously declared that "good people don't smoke marijuana." We'd be rolling in the aisles if it weren't so fucking frightening that these people are in charge of setting policy and making laws.

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ORGANIC ROLLING PAPER



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Nico Escondido shares cultivation tips with Vegas Cup attendees.

After Bogden's warning, High Times consulted with local and state authorities and, along with event partner Ultra Health, was confident that pulling off a safe celebration of the plant within Nevada's medical cannabis statutes was possible. The DOJ couldn't shut us down. As it turned out, the National Weather Service could.

Day one of the Las Vegas Cannabis Cup dawned on the Moapa Paiute tribal land with ribbons of pink clouds streaking over distant purple mountains while elders from the tribe gathered with High Times event staff to say a blessing as the late-winter sun rose. Buses began rolling up at the entrance shortly afterward, packed with eager attendees,

many of whom had traveled to Nevada from far-flung places for their first Cup. They poured in through the gates in good spirits, perhaps sensing the vibrations of the sacred land so recently blessed.

Booths and experiences abounded—there were no free samples, but attendees with medical cards were encouraged to smoke their own stash, and the VIP lounge was quickly packed with happy tokers digging through gift bags. As the desert heat took hold, folks flocked to the Honey Pot topical spa for free massages in a shaded tent. Others crowded into the Rosin Tech tent, where rosin experts demonstrated the brilliant simplicity of pressing buds for solventless extract.



Street artists perform live painting.

The background of the advertisement is a light-colored, marbled surface. Scattered across it are various items: several e-cigarettes with colorful bands (green, yellow, purple, red, black, pink), a bowl of pink ice cream with sprinkles, a bowl of green ice cream, a waffle cone, a golden spoon, and colorful confetti. A stylized black and white illustration of a man with a mustache is positioned to the right of the main title.

KANDYPENS Ice Cream Man

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Hip-hop's OG weed advocate, B-Real



Ludacris lit up the stage.



Magical Butter threw down with a cook-off in Edibles Village, subbing non-medicated grub for the customary cannabis-infused ingredients—disappointing to some, sure, but delicious nonetheless. And throughout the event grounds, attendees celebrated the herb by lighting up and sharing blunts, joints, bongos, dabs, vapes and every other kind of weed that Jeff Sessions hates because he's an uptight weirdo... who really should smoke a joint sometime, know what we're sayin', Sesh?

Day one closed out with white stars winking at rappers as they threw down for weed on the chilly, breezy desert night. Following up a killer set from Chief Keef, who took over the mic from hip-hop royalty B-Real, superstar Ludacris was on fire when he hit the stage, lighting up the show with hit after smash hit as the adoring crowd shouted back their love for him.

And then day two happened.

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HIGH TIMES

2016 S.T.A.S.H. AWARDS

OUR PICKS FOR GEAR OF THE YEAR

The High Times Cultivation Department is constantly on the lookout for new innovations in marijuana-farming technology. Each year, we reveal the latest and greatest grow gear as part of our Significant, Technological Achievements in Secretive Horticulture (or S.T.A.S.H.) Awards.



Best Power Trimmer Ultra Trimmer

The best trim job results from the least amount of contact with the blades. The Ultra Trimmer can process six pounds of product every twenty minutes without destroying the trichomes. With no violent tumbling that can break off gland heads, these units quickly and carefully trim off all extraneous leaf matter. The Collective unit does about 2.5 pounds per hour while the Industrial Deck can process 8-10 pounds per hour with four people working it.

\$4000 Collective Unit \$8000 Industrial Unit



Trimming up
product

MMA fighters Nick and Nate Diaz were to host the Cup awards show, which was cancelled due to high winds.

Day 2: Blown Away

Unfortunately, the second day of the 2017 Las Vegas Cannabis Cup was cancelled due to weather.

"Due to high wind advisories from the National Weather Service, we will not be able to open Day 2 of the 2017 High Times US Cannabis Cup Las Vegas presented with Ultra Health. A high wind warning went into effect this morning and will remain in effect until 10 p.m. PST with winds reaching 40 mph, including wind gusts over and above 60 mph. Obviously, the safety of our patrons is of the utmost importance to High Times, and we cannot put anyone in the middle of these dangerous weather conditions," read a statement from High Times.

This, obviously, was a major bummer. Terrible for the vendors, many of whom had traveled with their booths and wares from far-off places, and devastating for Cup-goers, especially those who had flown in, paid for a hotel room in Las Vegas, and bought weekend passes to the event. High Times offered replacement tickets for the next Cup, in San Bernardino in April, and everyone tried to take a deep breath and remember why it is that we were all gathered in the first place: to collectively celebrate the freedoms we've won through the national marijuana-legalization movement. Which we will continue to do, no matter what the government goons say.

So keep smoking, stay high, and join us at the next Cannabis Cup. We'll be blazing across the nation all year long. 🌿

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ADVANCED NUTRIENTS PIONEERS MARIJUANA GROWING EDUCATION

Advanced Nutrients has recently launched **Grow Med University (GMU)**, a free, self-directed online hydroponics course that reveals the latest techniques, tips, tricks, and technology used by the most competitive marijuana growers in the world.

Step-by-step tutorial videos, white papers, efficacy reports, and informative scientific articles allow any grower with an Internet connection to hone their skills and help produce their best harvest yet, free of charge.

Why Marijuana Growing Education Is a Top Priority for Advanced Nutrients

The medical marijuana industry is growing every minute. Legal marijuana is the fastest-growing industry in the U.S., and a slew of other businesses are jumping on the bandwagon as well. At present, 23 U.S. states allow medical marijuana use, while 7 have legislation pending to issue licenses for it.

4 states and Washington, D.C. have legalized cannabis outright, while another California referendum in 2016 will allow recreational use in a state that was the first to permit medical marijuana use way back in 1996. It is estimated that medical marijuana is already a multibillion-dollar industry (without counting recreational sales).

While a great deal of information and misinformation appears daily on the Internet, novices and more advanced growers alike are always looking for a source of reliable information which can serve to improve their yields, both in terms of quality and quantity. A whole community of growers inhabit the growers' forums and are always looking to perfect their growing skills, without having to wade through hours and hours of irrelevant or misleading forum posts.

GMU is a bold step in a better direction, and by elevating the general level of education among growers, the quality of marijuana, especially as medicine, will skyrocket worldwide. This isn't just for connoisseurs. It's for children with epilepsy, as well as adults suffering from the effects of chemotherapy, chronic pain, and glaucoma. Thousands of YouTube videos help document the impressive results of therapeutic cannabis use.

Grow Med University is a course representing the cumulative experience of scores of the most competitive growing experts. From day one, it was envisioned as a community-driven resource, providing much needed knowledge to the medical-marijuana community. If you have a passion for hydroponics and growing marijuana to help patients get rid of illness and pain, then **Grow Med University** is for you.



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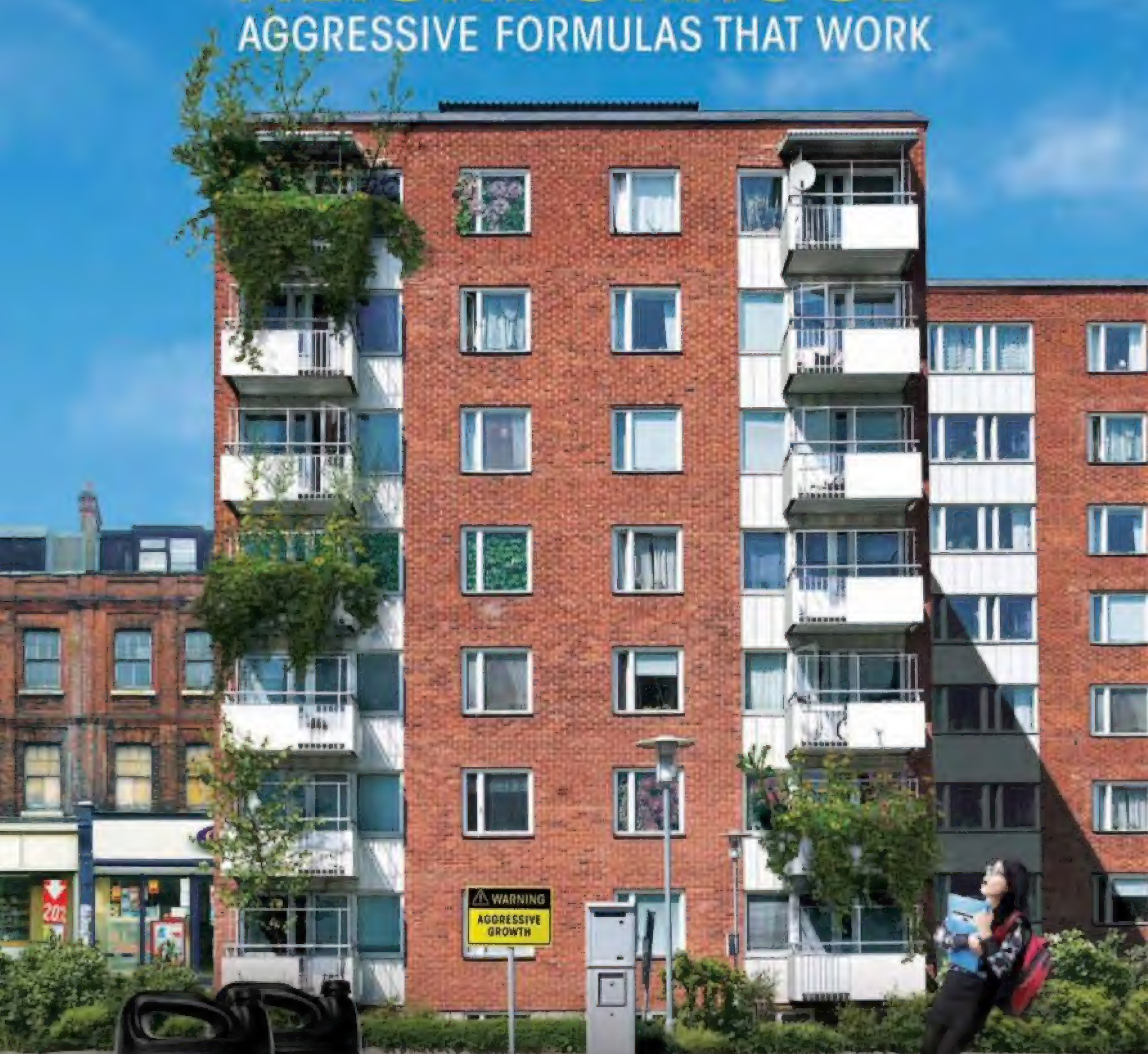


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Soil vs. Hydro

Over the years, the terms of this perennial debate have changed. *By Nico Escondido*



Outdoor cultivation is the primary use for real soil today.

When it comes to the age-old debate over whether it's better to grow cannabis in soil, or to grow the plant hydroponically, what we're really talking about in 2017 is outdoor versus indoor growing. Why, you might ask? Simply put, it's because no one actually grows indoors using real topsoil anymore, as our indoor "soils"

are really soilless mixes that are coco-, peat- or sphagnum-based. And, technically speaking, these soilless mixes are, by definition, hydroponic mediums; today, the only real earth soil used is in outdoor gardens. So let's examine the pros and cons associated with both growing outdoors in soil and growing indoors in hydroponic mediums.



Indoor hydro growers like this NorCal operation use "soilless" mediums.



Outdoor grows produce heavy colas and big yields.



This indoor Afghani Dream has dense trichome production and high potency.

Yield vs. Quality

Aside from the actual medium, the heart of this debate boils down to quality versus quantity. Granted, some of the best outdoor marijuana can surely hold its own against indoor marijuana, but more often than not, the level of quality in indoor weed easily trumps outdoor ganja.

Still, when it comes to yield per plant, the outdoor farmer will usually win hands down. The deciding factor here is obviously space: Outdoor gardens are virtually unlimited when it comes to plant heights, and it is not uncommon to see marijuana trees ranging in size from 10 to 15 feet tall. Plants on this scale can yield anywhere from 5 to 10 pounds apiece.

Of course, to pull this off, outdoor growers need to start as early as possible: Right after the last frost of winter, when the ground begins to thaw and spring is in the air, growers need to be ready to get their plants in the soil. This requires seedlings or clones to be started indoors four to six weeks prior, which means that the process begins for many outdoor growers as early as February.

Once the plants are in the ground, outdoor farmers have up to seven months of hard labor before harvest time begins. Irrigation, pruning, training and trellising consume hours upon hours each day. At the peak of flowering, each outdoor plant can require an hour of maintenance per day—and with dozens, if not hundreds, of plants in the garden, the man-hours and labor costs can really add up. While the yields come fall may more than make up for these costs, if the time isn't properly spent, the quality of the harvest will suffer.

Conversely, indoor growers tend to grow squat, bushier plants,

most often in automated hydroponic systems. These systems lend themselves to smaller plant sizes but can easily accommodate hundreds, even thousands, of plants in a commercial-garden setup. Hydroponic systems are well-suited for what is typically known as a “sea of green” (SOG)—or, more commonly, a “screen of green” (ScrOG)—setup, in which smaller plants are packed tightly together and grown through a screen trellis rolled over the garden canopy during the vegetative stage. Similar in theory to outdoor trellis systems, indoor screen trellises are usually horizontal and consist of string netting in 4-inch squares. Outdoor trellis systems, by contrast, are often vertical and wrap around the entire exterior of the plant; they can be made from wood, metal or wire screening that surrounds the plant like a cylinder, allowing the branches to grow laterally through the support structure.

By growing many smaller plants indoors, growers can attempt to boost their yields, but these still don't compare to outdoor yields on a per-square-foot basis. However, it's with the quality of the herb that indoor growers make up the difference. Because indoor growers can control every aspect of their plants' environment, they are better situated to maximize each strain's genetic potential.

Whereas outdoor growers have some control over watering and nutrient-feeding schedules, indoor growers can not only control irrigation and nutrient programs, but also the garden's temperature and humidity, CO₂ saturation, light cycles, and pest and disease controls. These factors can be crucial in determining whether or not a plant achieves its full potential in terms of cannabinoid and terpene production.

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HEC is a popular medium for indoor growers.



Mineral wool has been used for decades in hydroponic systems.

Indoor vs. Outdoor Mediums

As previously stated, the original debate over soil versus hydro has become a bit antiquated due to the fact that no one uses real earth topsoil indoors anymore. That being said, topsoil is still used in outdoor gardens today; however, even this is declining in frequency, as more outdoor farmers turn to composted mediums that combine smaller amounts of topsoil with decomposing organic material to create a fuller, nutrient-rich medium.

Composting is a deliberate activity that growers undertake with the goal of accelerating what occurs as a matter of course in nature—i.e., rot, or the decomposition of organic matter. This affects both the physical and chemical properties of the soil, improving the mineral content as well as aeration and moisture retention within the medium. In soil, compost acts as a slow-release fertilizer, adding both major and minor mineral elements to the medium throughout the plant's life cycle.

While composted soils are the more popular choice for outdoor growers these days, indoor growers are relying more and more on amended soilless mediums. These soilless mixes look, feel and act very similar to traditional soil, but they are coco-, peat- or sphagnum-based substrates that have added amendments like perlite, wood chips and vermiculite. As we know, hydroponics (or more accurately, water culture) is the method of cultivating plants without soil. So even though these mediums look and feel like soil, they are technically soil-

less—which, by definition, makes them hydroponic substrates.

Of course, soilless mixes are not right for every type of indoor hydroponic system. For example, the popular flood-and-drain setups that use flood tables and drain the nutrient solution back into a reservoir are not ideal for loose, granular soilless mixes. Instead, a flood-and-drain setup needs a more stable, immobile medium like rockwool or hardened, expanded clay (HEC) pellets. Soilless mixes are ideally suited for another popular type of hydroponic setup: top-feed grow systems.

Top-feed hydro systems rely on drip or spray emitters that are staked directly into the soilless medium at each plant site. These emitters are fed via thin spaghetti tubes running off the main water lines from the reservoir. Emitters drip or spray either pure water or nutrient solution into the medium at regular intervals controlled by timers on the reservoir pumps. These types of top-feed hydroponic gardens are among the most popular systems in use by indoor growers today, because the soilless mediums are very forgiving in terms of the mistakes that can be made in feeding nutrients to plants (more on this later). The more traditional hydro mediums, such as rockwool, HEC, and stand-alones like coco fiber or perlite, offer little to no protection for delicate roots when overfeeding occurs. This is why soilless mediums are often recommended for beginners and for smaller hydroponic setups outside of commercial gardens.

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When it comes to nutrient feeding, more is definitely not better. After the first month of growth, a plant's uptake of nutrients declines drastically, especially in terms of nitrogen. This is why, for cannabis growers, there are usually two-part formulas (A and B) for the vegetative stage and the flowering stage of the plant's life cycle. The medium used in the garden plays a big role in the plants' ability to absorb nutrients. At the root level, this ability is governed by the cation-exchange capacity, or CEC (which is similar to—but not the same as—electrical conductivity, or EC, which is measured by a ppm meter).

The CEC dictates the ability of a medium to hold moisture and nutrients for the roots to use when needed. Because of this, the CEC also affects the pH levels of both the medium and the nutrient solution being applied. The pH level is a critical factor in hydro systems, because it governs the outcome of an electrical battle between the roots and the medium. Mediums such as rockwool or HEC have an electrical charge of zero, making them electrically neutral and allowing them to very easily release water and nutrients.

However, a low or neutral CEC can be very dangerous to a plant, as it allows the roots to attract strong minerals directly into the root zone. This easy access to the roots is known as a loss of buffering and can lead to nutrient burn in the roots. Most hydroponic growers use nutrient solutions derived from concentrated minerals, so it's recommended that in gardens with a low-buffering medium, growers use mild nutrient formulas to start—especially if you're a beginner grower.

Additionally, when using hearty mediums such as a soilless mix that offers much better buffering, there are still dangers in overfeeding. An abundance of salts in the medium can lead to nutrient lock-up in the root zone, prohibiting plants from any nutrient uptake. Most synthetic fertilizers have higher salt contents than organic fertilizers, and these salts can build up residually over time and change the pH of the medium, preventing nutrients from being absorbed by the root system and causing the plant to dehydrate due to a lack of moisture uptake. This is another reason why mild organic-nutrient lines are often recommended for beginner growers.



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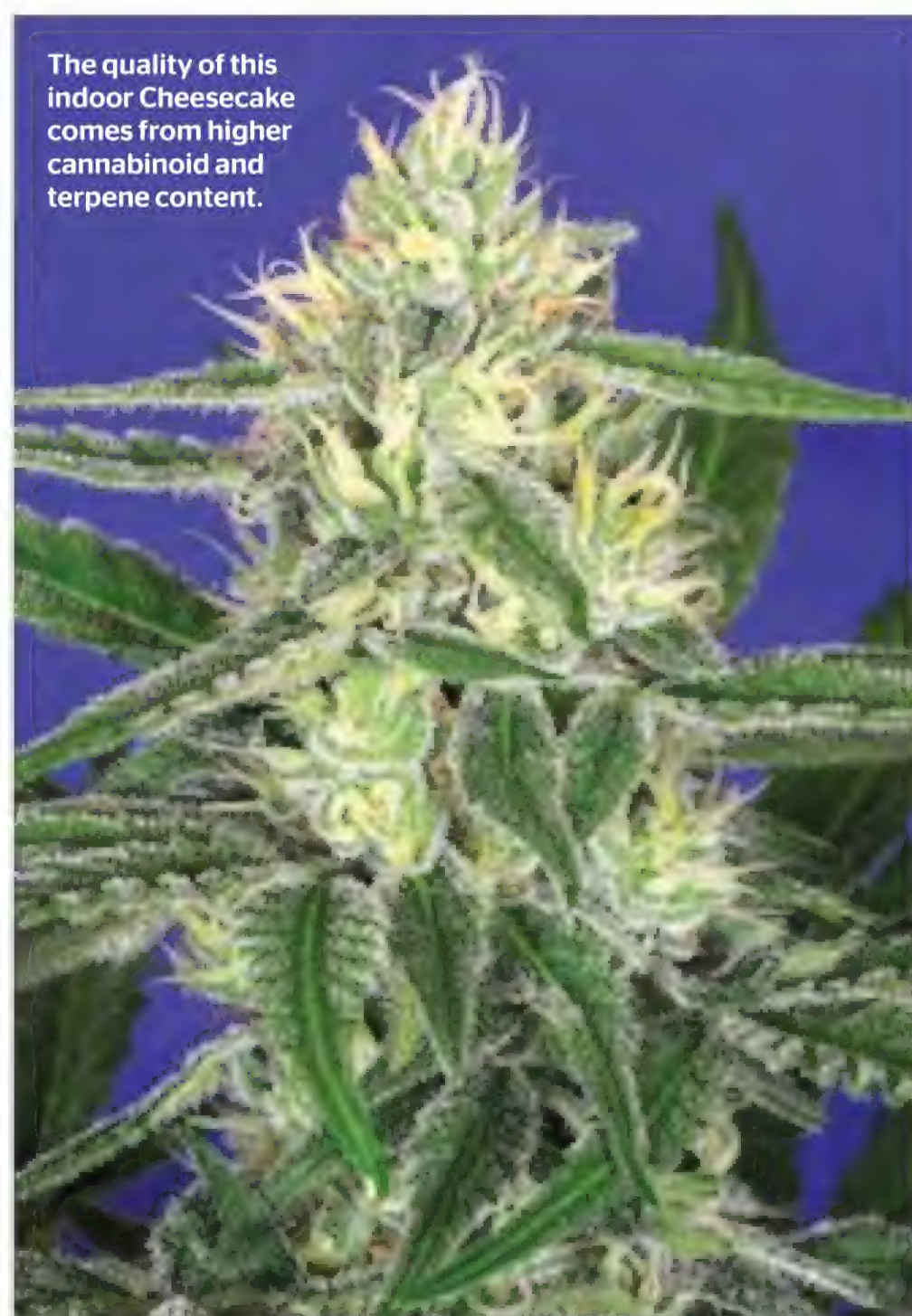
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Soil probes test for moisture content, EC and pH of grow mediums.



The quality of this indoor Cheesecake comes from higher cannabinoid and terpene content.

Understanding EC in Soil & Hydro

As mentioned previously, a ppm (parts-per-million) meter actually measures the electrical conductivity (EC) of a nutrient solution or medium. The ppm meter works by measuring how quickly electrons work their way from one probe to the other within a solution or medium. In nutrient solutions or grow mediums, salts equate to “stepping stones” for the electrons to travel faster, so solutions or mediums with higher salt concentrations (build-up) will have higher EC readings. Conversely, distilled water with no salts will have an EC of 0.

Since all nutrients contain salts, the more nutes that are present in a solution, the higher the ppm level will be. And the higher the ppm level, the more the salts will steal water away from the plant. This can lead to plant dehydration and nutrient lock-up. A solution of 1,500 ppm has high salt concentrations; at 2,000 ppm, roots will actually struggle to absorb enough water as the osmotic pressure increases. The optimal ppm levels for healthy growth range from 600 to 1,200 ppm, or an EC range from 0.9 to 2.4.

Indoor vs. Outdoor

When all is said and done, the advantage an outdoor garden offers over an indoor one really comes down to yield. However, the advantages that indoor growing offers are twofold: First, the quality can be much higher if done properly, and second, the grow cycles are usually slightly faster.

This latter advantage comes down to system type (hydro) and the medium used. This is because roots prioritize their intake in the following order: oxygen, nutrients and water. With oxygen being the surprise winner of the three necessary elements, we are reminded that roots, in fact, breathe in oxygen while the rest of the plant aboveground breathes in CO₂.

When you consider this fact, it makes more sense that hydroponic mediums that are less dense and more “airy” can aid in faster development. This is also why many hydroponic growers aerate their reservoirs and amend



Space, sun and fertile soil create huge yields in this monster Moroccan garden in the Rif Mountains.

their soilless mediums with additives like wood chips or vermiculite, as they help air penetrate the medium and latch onto other particles for absorption by the roots.

Still, there is plenty to be said in favor of sun-grown outdoor cannabis, cultivated deep in organic mediums with composted nutrients. These plants may not hit 28% THC, but they’ll be close enough and might even taste a tad better. So whichever way you decide to grow, remember to grow the right way and help the world grow, too. 🌿



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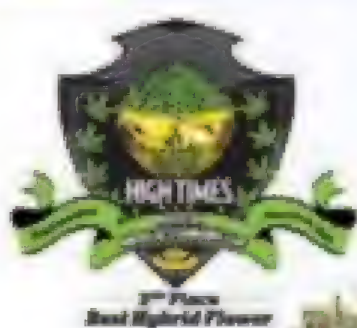
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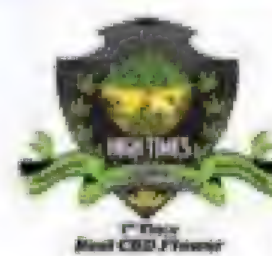
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Strains of the Future

With over 15 years of innovative marijuana-breeding experience, Dinafem Seeds has made an indelible mark on the cannabis scene. Founder and master geneticist Professor OG introduces the seed bank's newest line of autoflowering, feminized, CBD-enriched strains.

Story by Danny Danko. Photos courtesy of Dinafem Seeds



Purple Afghani Kush
plants thrive in the
Spanish sun.





Dinafem Seeds was started by Professor OG in 2002 as a project to create high-quality seeds that were different from those coming out of Holland at the time. In January of 2004, Dinafem became the first professional breeder of feminized seeds in Spain, just as the popularity of feminized strains was exploding. Dinafem strains like Critical+, Moby Dick, Original Amnesia, Haze Automatic, and many more changed the grow game and introduced a new blend of the finest Dutch, Spanish and Californian genetics for an entirely different flavor and terpene profile.

Dinafem's next innovation was to develop autoflowering strains with greater potency and bigger harvests. Some of its latest autoflowering strains, such as Moby Dick XXL Auto, Cheese XXL Auto and Bubba Kush XXL Auto, yield as much as regular seeds. The advantage of these autoflowering strains is that they typically have a life cycle of only 70 to 90 days from planting to harvest and can be grown during different seasons and in difficult climates.

Dinafem is constantly challenging the prejudices that exist about feminized and autoflowering strains. The

prevailing view among some growers is that feminized strains are weak and that autoflowering plants produce smaller yields of less potent buds. But Professor OG has delivered vast improvements in both areas over the years. These days, the yield and strength of Dinafem's Auto XXL strains rival and sometimes surpass those of their regular and feminized counterparts.

As the Professor tells me, "The results speak for themselves. Outdoors, the Amnesia Auto XXL can produce between 60 and 170 grams per plant. With respect to its dimensions, in optimal conditions, the plant can reach 170 centimeters [over 5 feet tall]. In Canada, a medical producer using our OG Kush Auto in a greenhouse has managed to produce, with 80 plants, a total of 17 kilos—212 grams per plant—in just 75 days!"

Professor OG and his team of breeders have decades of experience, and they're always looking for innovative ways to improve the gene pool using their elite library of cannabis genetics. To that end, the Dinafem team have their own on-site laboratory featuring the latest gas-chromatography equipment. The results of this testing shape all of their breeding decisions and, most importantly, their

newest and most exciting development: CBD-rich versions of popular strains like OG Kush, Haze, Amnesia and Cheese.

Professor OG predicts that cannabidiol—the cannabinoid popularly known as CBD—will change the world of marijuana as we know it and lead us into a new paradigm of legality above and beyond even the obvious medical benefits. All of Dinafem's CBD-infused strains have a minimum THC/CBD ratio of 1-to-1, and some, depending on the growing conditions, can reach 1-to-2 and even 1-to-3. But those still pale in comparison with the seed bank's Dinamed strain, specifically bred for the highest CBD level possible, which comes in at an unprecedented ratio of 1-to-25!

I was granted the rare opportunity to speak with Professor OG at his headquarters in the Basque Country of Spain to obtain a firsthand understanding of Dinafem's origins as well as the breeding techniques that his team used to develop autoflowering genetics capable of producing 170 grams per plant. We also discussed the future of cannabis genetics and the influence that CBD will have on newly legal markets. The following are excerpts from our wide-ranging discussion:

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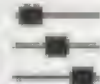
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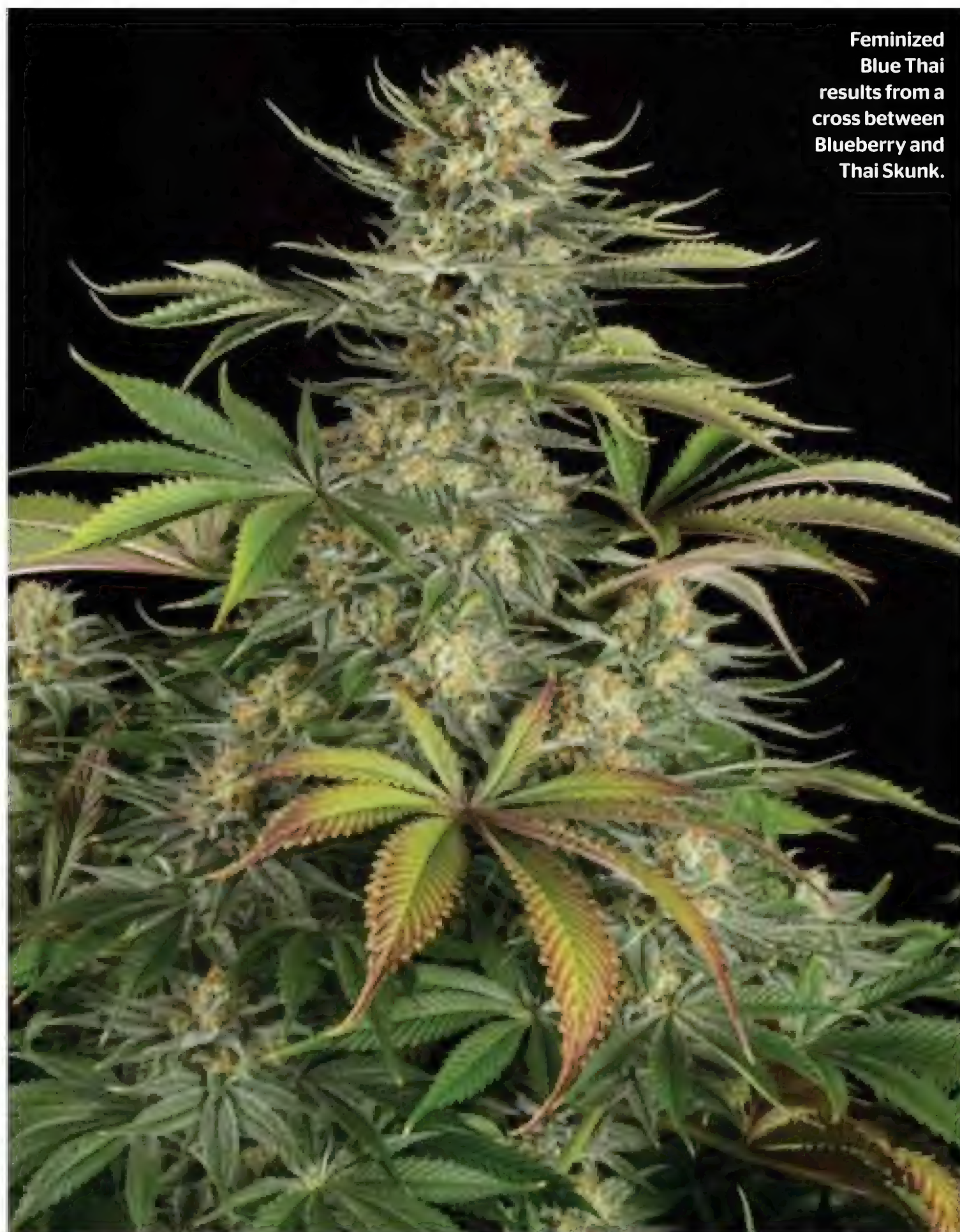
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Feminized Blue Thai results from a cross between Blueberry and Thai Skunk.



Even young seedlings display immature trichomes.

Where does your passion for the plant come from?

I was fascinated by nature and biology at a young age, and I really enjoyed investigating—collecting bones and feathers, buying Gerald Durrell's books and naturalist guides. I was captivated by seed catalogs and wanted to try everything. This interest in zoology and plants slowly evolved into a focus on botany. At the same time, during my adolescence I tried alcohol, but I didn't like it that much. However, shortly after, when I was 16, I tried cannabis—and yes, I did like it. That same year, at 16, I started growing my first plant on my mother's balcony. Then I produced my first guerrilla crops with seeds from Nepal and Colombia. At the age of 19, I moved to London and, in addition to improving my English, I got all the literature there was on cannabis at the time. I studied books like *Marijuana Botany* by Robert Connell Clarke obsessively. It was the year 1992,

and almost nobody cultivated cannabis in Spain, but I already knew a great deal about the subject.

After London, my next stop was Amsterdam, where I discovered the legal industry. Going into a grow shop for me was like being in a museum. It was in the early '90s, at a time when the Dutch scene was still on the rise and things were very open. In Holland, I saw the future of legal and professional cannabis.

When I came back from Holland, nobody in Spain was growing indoors. I joined Captain Ozone, a grower friend of mine—and currently part of Dinafem's technical team—and we soon mastered all forms of cultivation. Together with him and others, I began to work with modern strains that we bought from catalogs and began experimenting at making seeds.

Above all, we liked outdoor and guerrilla growing because we loved to be in nature, both in the mountains and in

“Today, feminized seeds represent more than 90 percent of the market in Europe.”

horticultural gardens where, in addition to cannabis, we cultivated absolutely any kind of edible and ornamental plants.

Did your interest in feminized seeds start at this time?

In 1996, while studying agriculture, livestock, floriculture, horticulture and management of an agricultural enterprise, I began experimenting with feminized seeds. In the book *Marijuana Botany*, there was a brief mention of just a few phrases about how to create feminized seeds with gibberellic acid. The possibility of creating seeds that were all feminine immediately caught my attention. Due to my curious and restless nature, I gave it a try. It didn't work for me, but this is very significant: There were no feminized seeds on the market yet, no one sold them, and although a Dutch bank had started testing, nobody knew anything about them yet... but I was already experimenting with them.

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Dragon Cookie

Dragonfly



Seeds form within female flowers after pollination from a male.



Moby Dick XXL Auto fills out quite nicely.

What does it take to set up a seed bank—and why feminized seeds?

To set up a seed bank, you need to have elite genetics so that, when you cross these parent plants, the resulting seeds are above average. These elite genetics, which still form part of Dinafem's genetic library today, have been safeguarded by Captain Ozone and other members of the team for all these years. Blueberry is 16 years old, White Widow is from 1998, and Critical and Jack Herer are from 2001.

When we started, the few feminized seeds available on the market had a tendency to hermaphroditism, and often the genetics used were not of the best quality. But the feminized market was on the rise. I knew that we could improve the quality of seeds—above all, I knew that these types of seeds were destined to dominate the market because of the productive advantage that they meant for the home or commercial grower. Today, feminized seeds represent more than 90 percent of the market in Europe.

In addition to a complete genetic library of elite plants, what makes the difference, from a breeding point of view, between Dinafem and other seed banks?

Patience and continuous improvement. For breeding, it's important to start with large quantities of seeds. On the other hand, we apply an extreme selection process that begins at the seedling stage. In this first selection, we usually remove almost 80 percent of the plants. This allows us to select according to their strength. A protocol is always applied to remove individual plants that have unwanted mutations. Any seedling that has the least defective trait is removed from the selection.

During the flowering period, more characteristics are expressed—for example, hermaphroditism. These hermaphrodite plants are always removed. Parallel to this protocol, as the process develops, the plants that don't reach the average requirements in terms of size and production are discarded.

We make our final selection according to the quality of the flower, which basically means maintaining the characteristics of the mother plant as much as possible. During the visual test, we look at both the size and density of the flower along with its amount of resin. The olfactory test is very important as well. The results of the chemical analysis from our in-house laboratory provide us with our biggest advantage in our selections. In some plants, we look for high concentrations of THC, in others to be CBD-rich, and in others the balance between both cannabinoids.



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from which almost all CBD strains that currently exist come from have a very sweet citrus flavor: mandarin, lemon, orange and cherry. That's why most CBD-rich strains have this kind of flavor profile. We're trying to change this by creating pure CBD-specific pollinator mothers with the traditional flavors of Bubba Kush, OG Kush, Amnesia, Cheese, Critical+, etc. With CBD, we are going through the second round of hybridization and improvement selections, and we've already achieved good results creating strains that taste like the originals, but with a high percentage of CBD.

Bubba CBD has strong medicinal properties.



Leaves await their gas chromatography testing.



How does your laboratory contribute to traditional breeding?

The laboratory, also known as Dinalab, just turned five years old, and it's a key element for the development of our genetics. Originally, we started it as a secondary project, in collaboration with two cannabis associations, to analyze samples from [Spanish cannabis] clubs and inform them of their cannabinoid content. In the meantime, we began to use these instruments for the breeding of autoflowering plants and to know our strains thoroughly.

Soon we realized that the chromatograph was a very useful tool for breeding. For example, in three generations we saw how autoflowering plants with less than 10 percent THC increased to 15 or 20 percent. We started using the laboratory for autoflower breeding, developing strains such as Bubba Kush Auto and OG Kush Auto. Chemical analysis is very

useful in improving the lines. In addition to reporting on cannabinoid levels, the analysis allows for better knowledge of genetics—for example, structuring the distribution of the chemotypes in a strain can help us to determine the state of the base material.

What is your recommended lighting schedule for autoflowering plants?

I recommend 20 hours on and four hours off throughout both the vegetative and flowering times for our autoflowering strains. At 18/6, we've seen much more stretching and long distances of stem between nodes and branches.

Tell me about your new line of CBD-rich strains. Is it possible for an OG Kush CBD to taste and yield like an authentic OG Kush?

Yes. It is not an easy task, but we are working to achieve it. The genetics

What's your take on the benefits of CBD beyond just the known medicinal ones?

In the future, people will probably consume more Bubba Kush with THC and CBD than Bubba Kush with THC only. The super-potency of current strains is a consequence of the black market. When cannabis becomes legal, the market will show a demand for milder strains. Marijuana is expensive because it's risky and dangerous to grow it. And because it's expensive and dangerous to buy, the person who buys it wants maximum power.

Cannabis is going to be a mainstream product and, as such, it will have to become a product for all audiences. In this sense, strains containing only THC will face some difficulties, because their side effects are sometimes too strong for the majority of the public. The side effects of CBD-rich strains are very small compared to pure THC ones, thanks to the neuroprotective effect of CBD.

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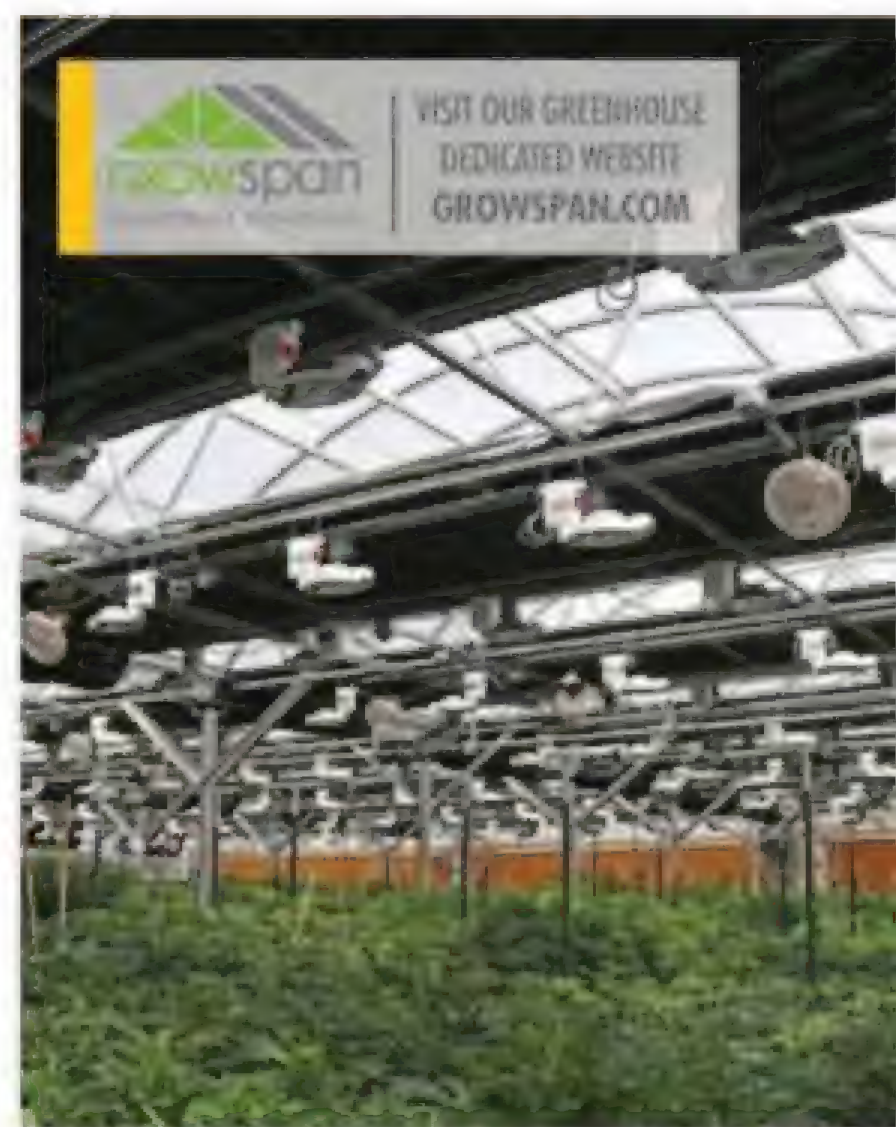
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Fields of auto-flowering Amnesia in Morocco.



What is Dinafem's goal for the next five years?

Our goal right now is to consolidate ourselves as world leaders in the advanced breeding of strains with a high organoleptic value and enriched with CBD. Thanks to our extensive library of elite genetics, which includes the best European, Californian and autoflowering strains, we're producing the best and most complete catalog of CBD-enriched strains. Breeding is a slow activity and requires constant work and investment, but we believe that the advantage we've gained will be maintained or even expanded in the future. ✨

"When cannabis becomes legal, the market will show a demand for milder strains."

CBD-RICH STRAIN SPECS

Amnesia Autoflowering CBD THC: 6% CBD: 12% THC/CBD ratio: 1-to-2 Life cycle: 70 to 75 days	Haze Autoflowering CBD THC: 7% CBD: 8% THC/CBD ratio: 1-to-1 Life cycle: 70 days
Cheese Autoflowering CBD THC: 6% CBD: 12% THC/CBD ratio: 1-to-2 Life cycle: 75 days	OG Kush Autoflowering CBD THC: 7% CBD: 14% THC/CBD ratio: 1-to-2 Life cycle: 70 to 80 days
Critical+ Autoflowering CBD THC: 5% CBD: 10% THC/CBD ratio: 1-to-2 Life cycle: 70 days	White Widow Autoflowering CBD THC: 5% CBD: 10% THC/CBD ratio: 1-to-2 Life cycle: 75 days
Dinamed CBD THC: 0.5% CBD: 10% to 14% THC/CBD ratio: 1-to-25 Flowering time: 60 days	

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Casualties of War

The devastating impact of the War on Drugs extends to higher education, as students caught with pot face losing out on federal financial aid and often, consequently, on an education. Drug offenses are the only crimes that must be reported on federal student-aid applications, and that's unlikely to change under a new administration laden with drug warriors.

By Dave Lindorff





Christy Billett could be the poster child for exposing the enduring perniciousness of the Drug War's attack on American college students.

Her story also stands as a stark warning about what many students may face under the Trump administration with an Education Department headed by Betsy DeVos and a Justice Department led by Jeff Sessions.

Back in 2000, Billett—then a working-class young woman of 18—was a few courses shy of completing her associate's degree at DuBois Business College in rural Huntingdon, Pennsylvania, where she was enrolled in a program that would have made her a medical-transcription administrator. But she found herself entrapped in a sting by a friend's father, a man with cancer who had asked his son to find him a source of marijuana to ease his pain. Billett, who had some pot and occasionally sold some, offered to sell him two ounces, but it turned out he was setting her up. While closing the deal, Billett was arrested and, without an attorney, agreed to make a statement to police. She subsequently hired a lawyer who managed to get the court to change her plea to "no contest," but the damage was done. A convicted drug felon under Pennsylvania law, when Billett filed a Free Application for Federal Student Aid (FAFSA) in January 2001 to cover her final semester's tuition, she discovered that she was permanently banned from receiving any federal tuition grants or student loans.

Now 36, married and with three kids, Billett says that her once-bright dreams of a career in the health-care field are gone. “I could have gone back to school after they changed the aid ban in 2006,” she says, referring to a congressional reform that reduced the permanent ban for people convicted of selling small amounts of pot to “just” a two-year ban, and the ban on possession to one year. “But my life had moved on. And besides, I am still a convicted felon, which makes getting a job hard. I basically live off my husband’s income.”

Billett isn’t alone. Since Congress passed a 1998 amendment to the Higher Education Act adding the deplorable Question 23 to FAFSA, hundreds of thousands of students have lost over \$200 million in federal tuition aid. That question is: “Have you ever been convicted for the possession or sale of illegal drugs?” Answering “yes” meant that you were permanently barred from receiving federal grants or even federally insured student loans for college, while answering “no” if you *did* have a drug conviction meant risking prosecution for defrauding the government—a federal offense carrying a fine of up to \$20,000 and five years in prison. Most of those barred from receiving aid, like Billett, were already enrolled in college but found themselves unable to finish school and earn their degrees.

Things improved considerably in 2006, when Congress finally acted to modify the ban. Instead of a permanent ban on tuition aid for any drug conviction, now students are at risk only if they’re arrested while actually registered in school and already receiving federal aid. Then they face a one-year ban on aid if the arrest is for marijuana possession, and a two-year ban for selling it. A second possession bust while in school means a two-year ban on aid, and a third conviction makes the ban permanent—but there are also options to get the ban waived by completing an approved rehab program and passing two unannounced drug tests.

However, even under the program’s eased rules, students continue to get barred from receiving financial aid. As Betsy Mayotte, director of consumer outreach at American Student Assistance, explains: “A few thousand students got busted each year even after 2006—and even under the Obama administration, it’s been over 1,100 a year who end up losing their aid.” She explains that the law hits poor students and minorities the hardest, since they’re more likely to be

arrested and often don’t have the money to hire a lawyer, leaving them at the mercy of police, prosecutors and judges. Meanwhile, the number of students losing their aid because of a drug conviction tells only part—perhaps a very small part—of the story. As Mayotte explains, “Nobody knows how many young people are not going to college because, when they start to fill out a FAFSA form to get tuition assistance and come to Question 23, if they have a drug record, they just mistakenly assume they aren’t eligible to get aid and give up on going.”

Efforts to obtain such data, as well as information about current and future policy on the student-aid ban, hit a brick wall at the Education Department, now headed by Christian activist and charter-school promoter Betsy DeVos. *High Times* sent a list of questions to the

department’s press office—from the number of students currently banned from getting aid, to simple policy questions like whether a ban can be lifted once a student enrolls in an approved rehab program or whether it must be completed first. After two weeks of promising to supply the answers, press officer Jim Bradshaw sent the following e-mail to *High Times*:

We checked on your questions about federal student aid and here is what we can tell you. On background, not for quotation by name but attributed to “The US Department of Education” or an “Education Department spokesman”: “The Department does not have any comment at this time.”

Betty Aldworth is the executive director of Students for Sensible Drug Policy, an organization that has been at the forefront of efforts to end the prohibitionists’ attack on student aid for those convicted of drug offenses. She notes that only drug convictions must be reported on the FAFSA form. (Convictions for coercive sex crimes are also supposed to prevent a student from receiving federal tuition assistance—but unlike with drug convictions, there is no requirement to report them on the FAFSA form.)

Incredibly, convictions for violent offenses—everything from breaking and entering to assault with a deadly weapon or even murder—do not prevent a person from receiving federal tuition assistance. In fact, although prisoners serving time in state or federal prison cannot receive federal loans or Pell Grants while behind bars, they are eligible for assistance if they’re in a county or municipal lock-up or a halfway house. All become eligible for aid once released from prison, even if they’re on parole—unless, of course, the conviction was for a drug-related offense.

Aldworth is concerned that after years of fairly relaxed enforcement of the aid ban—during the Obama administration, the Education Department appears not to have run any spot checks of those who answered “no” on Question 23 against criminal-conviction records—the Education Department under Trump could “start doing stricter enforcement of the drug ban again.”

Whatever DeVos’s views on banning student loans—she hasn’t said much on the issue, nor was she asked about it during her truncated Senate confirmation hearing—Trump’s new attorney

School Drug-Policy Rankings

Students for Sensible Drug Policy, with the help of its campus chapters, collects information on the drug policies of hundreds of colleges and universities across the country. The organization has completed a full 2017 survey ranking several hundred of the country’s educational institutions in terms of their drug policies. The list includes such categories as whether drug violations are automatically referred to law enforcement; whether resident advisers in the dormitories have discretion in deciding to report drug violations by students to police or to school administrators; and whether students can be evicted from dorm rooms for drug violations.

According to the preliminary report, which ranked 94 colleges and universities and was made available early to *High Times*, 54 schools have policies that require notifying the police for all drug violations; only 26 gave RAs discretion about reporting violations; and 77 schools sometimes evict students from dorms for violations—with seven mandating eviction for any drug use or sale.

Interestingly, some of the schools receiving the worst grades are located in states that have legalized marijuana. At public universities in both Colorado and California, the policy is to report all student drug infractions to police and to school administrators.

Data for the survey was collected during the fall of 2016. The full survey will be available at ssdp.org in a searchable online version this spring.

Continued on page 90...

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general, Jeff Sessions, is known to be an uncompromising opponent of marijuana use. The former Alabama senator, who believes that cannabis is “only slightly less awful than heroin,” reportedly once said that he thought the Ku Klux Klan “was okay until I found out that they smoked pot” and, more recently, during a Senate drug hearing in April 2016, proclaimed, “Good people don’t smoke marijuana.”

Sessions has made it clear that he intends to re-energize the discredited War on Drugs, including marijuana. In a recent memo to Justice Department prosecutors, Sessions said that he would be issuing new instructions requiring them to seek the maximum charge in any case—a reversal of a 2010 instruction from former Obama Attorney General Eric Holder that allowed prosecutors to avoid higher charges and minimum-sentencing requirements, in part by not including the quantity of drugs confiscated during an arrest in the charges. As Ohio State University law professor Doug Berman told Politico, “Holder said you don’t have to charge mandatory minimums” in drug-arrest cases—but under AG Sessions, “it looks like they’re going to say, ‘Oh, yes, you do have to.’”

A year ago, Senators Orrin Hatch

(R-UT) and Robert Casey (D-PA) teamed up in a bipartisan attempt to insert an amendment into the Higher Education Act eliminating Question 23 from the FAFSA form, but the measure died when the Senate failed to even vote on the HEA. Most politicians contacted said that given the Trump administration’s focus on issues like immigration, ending the Affordable Care Act and cobbling together a replacement for it, and tackling campaign promises like an infrastructure bill and increased military spending, it’s unlikely that any effort to remove Question 23 would get very far in the current Congress. It’s also unclear what the mercurial Trump’s position would be on it.

Certainly his nomination of Sessions appears to be an endorsement of a harder line on drugs, including pot. Meanwhile, just word that the Trump administration is reviving the Drug War, and fears that the Education Department could become more aggressive in enforcing the ban on student aid for those convicted of drug crimes, is likely to make colleges and universities stricter in enforcing both state and local drug laws as well as university sanctions against students busted for drug use or sales.

Consider Pennsylvania State University,

one of the country’s biggest public higher-education institutions. Although State College, the small town where Penn State is located, recently decriminalized marijuana possession, the university—which has its own much larger state-sworn campus police force—has instructed its officers to charge students busted for cannabis with a misdemeanor, and to refer their cases to the Centre County District Attorney’s Office for prosecution.

The justification for this harsh approach was explained as follows in a note sent to *High Times* by a university spokesman:

As a public university, Penn State must follow federal law or the University could risk losing all federal funding. Federal law still considers marijuana use and possession a misdemeanor.

Following state and federal law, university police will charge individuals who violate the law. Whether they lose their aid is not something I can confirm, because every situation and police encounter is fact-specific to that case and there are a number of factors that trigger the loss of aid—beyond our control.



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Police make arrests and refer cases to the prosecutor's office, which ultimately decides to charge an individual or to not bring charges in the case.

In practice, the county DA generally says it offers arrested students—most of them middle-class white kids—a chance to enter an Accelerated Rehabilitative Disposition (ARD) involving one year of probation and expungement of the arrest record if no further arrests have occurred during that period. But neither the DA's office nor Penn State could provide any information on how many students caught up in campus pot busts had received ARDs or how many Penn State students have lost their aid because of arrests. ARDs are not offered to students arrested for selling drugs on campus, only for possession charges.

Betty Aldworth finds college crackdowns on weed use understandable if ill-considered. "It's a pressure point for the Department of Education," she explains. "The text of the Higher Education Act says universities have to have rules against possession or the use of drugs on campus. It doesn't say what those rules must be, but schools are terrified about losing their loan allocations."

For her part, drug-ban victim Christy Billett, while unable to find a good job thanks to her felony record, has been fighting back by trying to legalize marijuana in Pennsylvania. She founded and is executive director of Pennsylvanians for Safe Access (pasafeaccess.com), which advocates the right of anyone in the state to grow marijuana for personal use. Her site was instrumental in getting the state's Republican-run legislature to legalize medical cannabis last year. ✨

Dave Lindorff is an award-winning veteran investigative journalist based in Philadelphia. The author of four books, a former Business Week China/Hong Kong correspondent and contributor to many magazines, he is also the founder of the collectively run journalist website This Can't Be Happening! (thiscantbehappening.net).

The following lists includes the best and the worst of SSDP's nationwide ranking of schools for drug busts based on their preliminary report.

No institution of higher learning encourages drug use. However, if you happen to get busted with drugs, these schools are the most lenient:

1. University of Maryland - College Park
2. University of Maryland - University Park
3. New College of Florida
4. University of Pennsylvania
5. Harvard University
6. Cornell University
7. University of Connecticut
8. University of Massachusetts - Amherst
9. Brown University
10. Georgia Institute of Technology

And these are the schools with the worst policies regarding drug use:

1. Kaplan University
2. Broward College
3. Liberty University
4. Northern Virginia Community College
5. American University
6. Excelsior College
7. Ashford University
8. Walden University
9. Western Governors University
10. Cornell College

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Piranha—Expand the surface area of your plant roots by up to 75%. Help your crops obtain as much as 86% more nitrogen, 234% more phosphorus, and 75% more potassium. This means heightened grow, greater leaf area, more bud production, better bloom structure, and increased weight. Piranha Liquid also seeks and destroys harmful pathogens and molds, while strengthening crop resistance to stress.

Tarantula—Its beneficial bacteria inoculate the roots, safeguarding them by competing with and warding off harmful bacteria that can infect your plants. Reduces tissue damage from heavy fertilizer salts. Increases plant growth and yields by releasing grow and bloom cofactors and aiding chlorophyll, so your high-intensity lighting is more effective.

Microbial Munch—Maximize your microbial support, strengthen and maximize the benefits from all the beneficial microbes and fungi. It's a "superfood"—exactly what your plants need to transform into bigger, stronger, more resilient, and more beneficial creatures. In short, it's like putting them on steroids.

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Revive—Guaranteed to rejuvenate your crops if they get into nutrient-deficiency trouble—which can happen if something unexpected and beyond your control occurs...or you're using inferior nutrients. Save plants in distress by adding it to your nutrient solution or using it as a foliar spray at the first sign of trouble. These rejuvenating substances flood the plant with healing nutrition. Use it at the first sign of trouble and your precious plants will get their best chance not only to survive, but thrive!

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Rhino Skin—Increases trichomes and resin production. The plants harvest more resin, stand up straighter and support bulkier, heavier buds. You'll get big, sticky, potent harvests with more market value.

Bud Factor X—Increases essential oil and terpene (BAG) within plants to produce more potent amounts of essential oils and terpenoids which directly benefit taste, aroma, and resin production, giving you higher-quality crops with greater market value.

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Overdrive—Get even more out of your plants during the finishing phase. Reinvigorate your crops with a second wind, giving you much bigger yields when harvest day dawns.

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Flawless Finish—Removes excess chemical residues from your growing medium, roots and other plant tissues, including fruits and flowers. You'll have the cleanest, truest yields possible. Use Flawless Finish right before your next harvest and taste the results for yourself.

Mother Plants & Clones

Having plants that all predictably grow at the same rate and mature at the same time is a big advantage. That's why so many cannabis growers start their crops with clones taken from mother plants.

Story & photos by Erik Biksa

Phenotype vs. Genotype:

What's the Difference?

In rooted cuttings (i.e., clones), phenotype refers to the physical appearance of the plant. Plants with the same genetic makeup can wind up looking different—displaying different phenotypes—if they're not grown under the same conditions. Sometimes the term can also refer to the different appearances that occur in seeds from the parental cross.

In plants, genotype refers to the actual genetic building blocks that the plant was created from—specifically, which genes were isolated and combined. The phenotype is the expression of these in the physical growing environment.

Selecting a Mother

All cloned plants have their origin with a seed plant. In cannabis plants that are commonly cultivated for THC, CBD, and the other cannabinoids and terpenes, either nature or a plant breeder introduced male pollen from one plant to the female flower of another.

Professional breeders master the art of selecting parent plants as well as which ones to combine to get known and desired results in their offspring. Otherwise, cannabis breeding is a game of dice with a huge number of varying odds.



Keep stems in water immediately after cutting.



Potential mother plants undergo assessment of THC, CBD and CBN.

The ability of growers to replicate that one special seed plant over and over from thousands of possibilities is a very powerful tool that can be harnessed for cropping success. This is the process of cloning from mother plants—taking the cuttings and then rooting them to grow bud.

Identifying Your Mother

Mother plants can be a keystone in growing success. Having many identical plants reaching the same height and size at the same time under the same growing conditions, with known qualities in the buds at harvest, can make anyone a successful grower—provided, of course, that they select a mother plant to clone that suits their growing needs.



Healthy mother plants can produce many clones.

Healthy Stock Means Better Future Crops

Once you know which plant will be your mother plant, you'll want her to be healthy, robust and free of problems. Here's a quick checklist to ensure that your moms are healthy and in perfect form:

Are the tops of the plants yellowing or showing distorted growth? What about the bottoms—are they yellow or showing signs of scorching? If you answered "yes," identify the problem and wait a week after making adjustments before taking any cuttings.

When you look closely underneath the leaves with a magnifier, do you see anything moving around or any small, perfectly round egg-type structures? If you answered "yes," identify the insect—is it a common problem like spider mites, whiteflies or thrips? This should be treated before you take any cuttings.

Is there any light powdery mildew or molds growing on any otherwise green parts of the plant? If you answered "yes," you may need to treat for powdery mildew or other foliar diseases before taking any cuttings.

Have the plants been growing vigorously in a fully vegetative stage (leaf growth only) and drinking up water and nutrients regularly with no pH issues or nutrient buildup? If you answered "yes" to this and "no" to all of the earlier questions, you're on the right track to reaping an abundant harvest of buds from your future crop of clones.

Preparing to Take Cuttings

The "Triangle of Success" for producing healthy crops of clones consists of the following.

Readiness

Once you start the actual process of removing live branches from your plants to root as cuttings, you need to move quickly and surely. It's kind of like surgery: Have the necessary tools right where you need them when you need them, including:

A cutting board or clean, hard, flat surface

Propagation trays and domes (10" x 20" nursery trays and clear, tight-fitting lids)

A medium to stick the cuttings in (peat pellets, rock-wool cubes, organic plugs, etc.)

Dechlorinated water, either filtered or spring water

A water glass or vase

A sharp, sterile blade

Scissors

Root stimulator

A "hole poker," such as a metal nail about the same diameter as your cut stem

A spray bottle

Gentle fluorescent or full-spectrum LED lighting, 12 to 18 watts per tray

A thermometer

Cleanliness

Keeping things hygienic produces stronger, healthier rooted cuttings. Propagation environments are warm and humid, which makes them the perfect breeding ground for plant diseases like stem rot. By keeping things clean throughout the process, you can avoid introducing harmful disease-causing bacteria or fungi by way of dirty tools or fingers, etc. Cleanse, scrub and rinse all of the materials coming into contact with the plant material while taking your cuttings.

Pro tip: One part unscented liquid chlorine bleach to nine parts cold water is a good all-purpose cleaning and disinfectant method for all of your propagation materials (trays, domes, cutting surfaces, etc.). Rinse these well after scrubbing with the bleach solution. Tools can also be wiped with isopropyl alcohol before use.

Wash your hands well before handling the cuttings and propagation materials. Gloves add a further degree of protection.

Steadiness

While a steady hand helps, steadiness is more about maintaining a stable environment for the cuttings while they root and moving quickly and surely through the process of taking cuttings from plants, sticking them into the medium and covering them with a humidity dome. Minimizing the time that a cut stem is exposed to air is very important so that an air bubble doesn't develop in the stem or that it becomes infected from contamination via exposure.

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How to Take Cuttings

Create a workspace that is free of obstacles and allows you to work easily. You'll want to be able to make the cut on a flat, clean surface, dip the cutting in a rooting stimulator, and then stick it into the rooting medium as quickly and steadily as possible. This means having your cutting board, blades, and rooting stimulator all clean and laid out at the ready.

You'll need to have your rooting medium prepared beforehand. Using filtered or spring water is recommended for this process. Some types of materials, like rockwool, may require that you adjust the pH of the water (i.e., to increase the acidity to counteract the high pH of the rockwool material). Inexpensive liquid pH test kits, such as those for aquariums, are widely available. Food-grade pH adjusters can be purchased as well from your local hydroponics supplier.

Pro tip: Adding a very mild nutrient charge to your rooting medium is recommended—for example, fertilizer at one-eighth strength. Beneficial microbes typically perform best once roots form, although species like *Trichoderma* can be helpful in preventing outbreaks of disease-causing microorganisms from contamination in the rooting materials.

Once your medium is prepped, covered and put under the lights, place a clean thermometer under the dome and wait until it warms up. Optimally, you want around 75°F to 82°F inside the propagation environment. With a snug-fitting humidity dome, you should see moisture begin to bead up on the lid—this is normal and shows good humidity levels to root the cuttings. If the air is too dry, the cut stems (which have no roots) will dehydrate quickly, wilt and die.

Fill your spray bottle with clean filtered or spring water. Adding some B-vitamins helps prevent shock in both the mother plants and the cut stems during the process. You can add the same solution to a clean water glass or flower vase as well. Raise the lights or shut off any high-intensity lighting sources and give the mother plant(s) a light mist.

Next, give the donor branches a final inspection, then cut off portions of the stem longer than you intend to root. Put the cut end into your water glass or vase filled with solution right away. Gather up several branches or stem pieces like this until you have enough to fill a tray or as many as desired.

With your rooting medium neatly beside your cutting area, and with holes for the cuttings pre-poked to a depth of at least three-quarters of an inch, you can strip away excess foliage and growth sites from the cut material, leaving a clean stem with a 2-to-3-inch-diameter crown of foliage at the top (trim any excess with scissors). Finally, place



the stem down flat on the board and make a 45-degree cut to the final length for rooting.

Dip the cutting into your rooting stimulator, following the manufacturer's instructions. Finally, stick the dipped cut end into the rooting medium. Make sure that your fingers are clean and gently firm up the medium at the top of the stem to ensure good contact. Give the cut clone a very light mist and continue until the tray is full or you have sufficient cuttings prepared. It's advisable to root at least 10 percent more cuttings than you'll ultimately need (select only the best later).

Cover the tray with the humidity dome and keep under constant, gentle full-spectrum lighting. Make sure that the temperature remains a steady 75°F to 82°F. Lift the dome off daily and wipe it with a clean paper towel, then place it back on top.

Most types of rooting medium won't require any more watering until the roots show when using a snug-fitting propagation dome, but some might. Use your best judgement, being very careful not to overwater and create stem rot in the warm, moist environment.

Pro tip: Ensure that there's no freestanding water on the bottom of the tray(s) underneath the rooting medium, and add a drainage layer if necessary.

Some strains will root faster than others; however, you will usually start to see roots in 10 days following these directions. Once more than half of the cuttings are showing roots, start lifting the dome off for 15 minutes at a time and leaving it back on for several hours to "harden off" the cuttings prior to transplant. Also, keep plants with small root systems away from strong breezes or ventilation.

I CHALLENGE YOU TO A DUEL

Article by Jeremy Deichen



Growing Exposed is a new video series produced by Jeremy Deichen. Coined "the MTV Cribs of the marijuana industry" the show is led by host Amanda Mackay. Take a view behind the scenes, into the world of cannabis growing. In addition to garden tours, David Robinson, author of The Grower's Handbook lends his expertise in a segment entitled Teachings Of The Garden Sage. David's has dedicated his life to dispelling the myths behind cannabis, while educating people on how plants grow.

**When you hear to the words
"I challenge you to a duel"
you generally think of two
people preparing for battle.**

But in this case, it's referring to a challenge for growers to try a revolutionary new base plant food manufactured by Green Planet Nutrients called Dual Fuel. The name is both fitting and clever considering it's providing all the energy the plants need packaged in a 2-part formula. If you are wondering exactly what the challenge is... well, it's a classic one. Try Dual fuel against any other brand for one crop, and then tell us which one you feel should be the winner. Here is one grower's experience from his Dual Fuel challenge.

Chris is a master grower based out of the snow-capped mountains of the Kooteney Region. Famous for growing high quality buds, this area is considered the mecca of growing in British Columbia, Canada. With multiple facilities under Chris's brand, Hillside Pharms, he was skeptical about switching out fertilizers from his current feeding regimen. Already pretty happy with his final product he didn't think it would make that big of a difference.

Starting with his genetics he had already gone through the time consuming process of correctly selecting a phenotype from seed. He felt he had a winner with this indica-dominant strain called Wappa. Wappa is known for being heavy and sedative. Good

for relaxation, medical patients have found this effective for insomnia and pain relief.

Chris was also happy with his reliable drain to waste system. Starting in rockwool, Chris gives the plants 2 weeks in the vegetative growing phase. Then he transplants them into 8-inch rockwool cubes as he flips them into flower. But...when he did it this time while using Dual Fuel...Chris could not help but notice the initiation of flowering sites were appearing faster. He went on to explain that his crop actually finished a week early!

He was also surprised at how simple it was to use. Chris has multiple cultivation sites and workers need a dummy-proof feeding schedule. Chris was clear when he said "Hillside Pharms has never used something so simple from start to finish." The formula is so complete, it eliminates the use of calcium or magnesium additives. This is so BIG!



Chris also couldn't believe how economical this was to use in the garden. Turns out this was intended and designed by Green Planet to be viable for large commercial applications. So when we asked Justin Cooper from Green Planet Nutrients about who is currently using this product he said, "Some of the largest federally licensed producers in Canada are running dual fuel and it is single handedly changing their gardens. We are talking about large projects with investors operating in the stock market with share holders that can not afford to run a sub par product.

I was blown away by the vibrant yellows and purples that were predominate on the final product. You can see the trichomes on the close up are covering every piece of the flower, which make high yielding concentrates. Chris explained that he drops the temperatures in the rooms to 60 degrees in the last week. He also pointed out that you should flush your plants a few more days than normal when using this super-charged formula.

**Here is a list that makes
Dual Fuel the winner of this Duel:**

BEST VALUE ON THE MARKET

•Commercially viable

EASY APPLICATION

•Less room for error.

HIGHLY CONCENTRATED

•Plants finish faster

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HIGHER YIELDING

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COMPLETE FORMULA

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Dual Fuel,
Green Planet
Nutrients



Collars should firmly hold the stems.

Many aeroponic propagation systems, like the well-known EZ Clone series, are also great for rooting much larger cuttings with full sets of leaves. Rooting 9- to 12-inch-tall cuttings with massive root systems is very doable using aeroponics, saving the valuable vegetative-growth time typically required later.

Most aeroponic cloners come with a set of instructions developed over time to help ensure successful cloning for anyone using their system. However, based on years of feedback and research, here are some master aero-cloner tips to further guarantee your success or perhaps take it to the next level:



Always label clones for proper identification.

Run it warm. Keeping the solution at 80°F, while contrary to most optimal-temperature ranges for hydroponic root systems, can amp up your clones' metabolic rate and speed up the rooting process, assuming good hygiene.

Intensify the light. Your aeroponic cuttings will respond positively to slightly more intense lighting levels because they're not stressed for moisture and oxygen due to optimal conditions at the cut stem in the aeroponic system's rooting chamber.

Go big. You can root much larger cuttings with ease using aeroponics, even with full sets of leaves to save on veg time later on.

Pro tip: Most aeroponic rooting systems like the EZ Clone don't require a propagation dome because plants can breathe oxygen and take in plenty of moisture at the cut stem, keeping hydrated and healthy while rooting. While this is great because it helps prevent any funk, and lets your plants breathe freely and even grow while rooting, it means you should avoid ventilation or breezes in the propagation area that can cause moisture stresses.

For further consideration: Believe it or not, aeroponics just might be the best rooting method for organic marijuana growers. Because plants root so fast and well due to the amped-up oxygen levels, you can stimulate new root systems in a respectable amount of time without the use of rooting stimulators (i.e., synthetic hormones). There are some great aeroponic-cloner recipes out there that take advantage of beneficial microbes and other natural ingredients rather than synthetic chemicals. 🌱

Further Tips

If it's a little colder in your spot, consider using a heat mat to provide gentle, even bottom heat.

If it's getting too warm inside the humidity dome, try moving the light source further away or choose a slightly cooler spot to set up.

Aeroponic Cloning: Next-Level Plant Propagation

If you're serious about plant propagation, or perhaps don't have the time or patience for rooting clones using the traditional methods, aeroponic cloning could be your ticket to cropping in the fast lane.

Just like a serious high-performance engine or a well-trained athlete, aeroponic cloning takes advantage of oxygen boosts to ignite a faster and stronger rooting process. Aeroponics involves using sprayers to diffuse the nutrient solution, increasing the surface area for dissolved oxygen (DO).

Pro tip: Roots LOVE oxygen!



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BY MARY JANE GIBSON

LUDACRIS

THE HIGH TIMES INTERVIEW

The Grammy Award-winning Christopher Bridges, a.k.a. Ludacris, cut his teeth in the music industry as an influential “Dirty South” rapper. Yet in his remarkable nearly 20-year-long career, Ludacris has achieved mainstream success as both a musician and an actor, appearing in hit movies like *Crash*, *Hustle & Flow*, and the *Fast and the Furious* series. Given that he’s an avid smoker—as evidenced by his hazy “Blueberry Yum Yum” video from the album *The Red Light District*—*High Times* couldn’t wait to get Ludacris to perform at a Cannabis Cup. Fortunately, the Atlanta-based artist was able to join us in Las Vegas, where we caught up with him just before showtime.

Ludacris takes
center stage at
the Las Vegas
Cannabis Cup.



"The future of weed looks very bright right about now... I know a lot of artists that have been trying to advocate it, and they help the fight."

You perform in Amsterdam. What do you think of the cannabis scene there?

Amsterdam no longer has the best weed in the world. I'm going to have to give that to Los Angeles, California... in the world.

What do you like to smoke?

I like *sativas* myself. I'm definitely more of a *sativa* guy than an *indica* guy. That's just me.

Are you still tight with the grower for "Blueberry Yum Yum"?

No, because that was in Amsterdam. I haven't talked to that person in a very, very long time. I've got my own growers.

How did the "Blueberry Yum Yum" video come to be made?

The story of the way that video came to be made was just spur-of-the-moment: We had our camera guy out there, just documenting everything we were doing in Amsterdam, and we came upon that place and just decided to turn on the music and do a couple verses. Next thing you know, we put it all together.

At the end of that video, you say: "Is there hope for weed to ever be legalized in the United States?"

What do you think about that possibility now?

The future of weed looks very bright right about now. I'm very happy at the way things are happening—I feel like it's been a long time coming, and I know a lot of artists that have been trying to advocate it, and they help the fight. I'm just hoping that everybody is happy, because who would have seen this coming? Honestly speaking, nobody would have seen this coming.

What are you currently doing in the cannabis industry?

I got my things—I'm a businessman, I'm an entrepreneuro, so I can't let all my secrets out. But I'm definitely trying to get involved in some of these dispensaries... believe that.



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Luda on the canna-bus

What's the weed scene like in Atlanta right now?

In Atlanta? The weed season never stops in Atlanta for the true smokers... put it that way.

How does East Coast weed compare to West Coast weed?

That's a good question. I don't really have a favorite East Coast versus West Coast strain. I just—it's kind of like when people ask me what I like to drink. It's like, "Whatever gets the party started."

What's your favorite time to get high?

My favorite time to get high has got to be in the evening.

Who's your ideal smoke-sesh partner?

My ultimate smoke partner has got to be Willie Nelson. That's who I dream to smoke with one day... yeah.

How did you make the leap from music to movies?

I kind of made the leap from music to movies

because my man John Singleton, who's responsible for taking a lot of people from the music world and putting them in the movies, he asked me to be in *2 Fast 2 Furious*. He asked me to try out for it. I remember being on the Eminem tour, and backstage I had a camera and tried out for the part, read the lines. Next thing I know, I got the part.

Do you have a favorite film role?

Probably on *Law & Order: SVU*, to be honest with you.

As an artist working right now in music and film, what do you want to see coming out of Hollywood?

More weed movies—we need a classic Cheech & Chong movie, you know what I mean? Let's go. Or *How High 2*. Come on.

How do you relax after a tough day on the set?

Weed.

Do you use topicals or edibles?

I don't do the edibles. I've done them before, but, you know, that's not really my thing.

You've worked with a number of different artists, including Missy Elliott, John Legend, Justin Bieber. How do you choose who you collaborate with?

Sometimes you don't choose who you collaborate with—they choose you.

Is there someone you haven't worked with yet that you have your eye on?

I would love to do a song with Eminem. You know, we were on tour together, we talked about it, and it just never really happened yet. But one day, hopefully, that'll happen.

You're about to perform at the Cannabis Cup in Las Vegas?

Oh, yeah. Yeah. Performance tonight, Cannabis Cup Las Vegas. My first time... hopefully, it won't be my last. I'm ready to set the stage on fire—literally. 🌿

The logo features a stylized plant icon with a white arrow pointing upwards. The word "feeding" is in a large, bold, sans-serif font. Above it, "Greenhouse" is written in a smaller, cursive font. Below "feeding", the phrase "keep it simple!" is in a smaller, italicized font. At the bottom, "Award winning plant feeding!" is written in a bold, sans-serif font.

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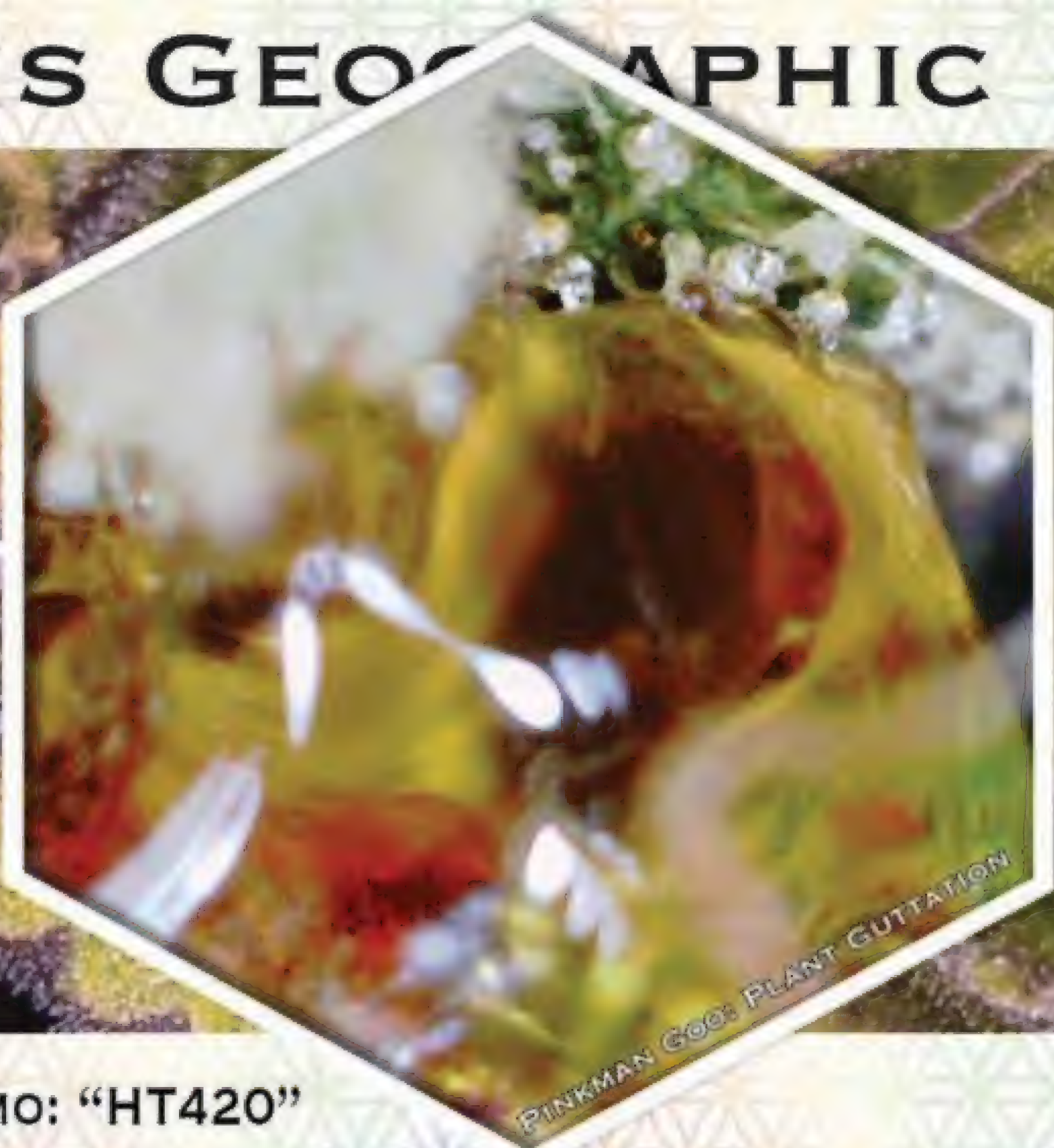
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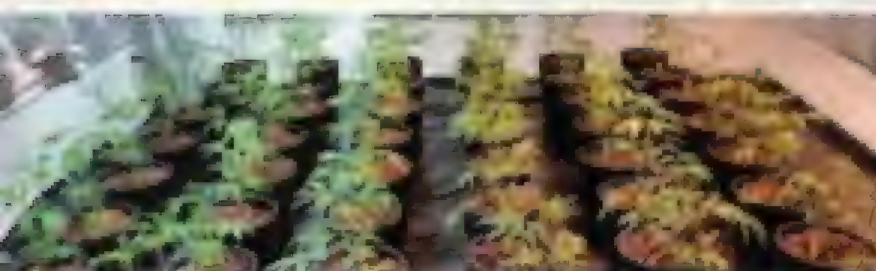
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SUBJECT: **Dude Looks Like a Lady**

FROM: **D in TN**

🌱 Please help me with a few questions:

1. If a female plant turns out to have male pollen sacs (bisexual) and is cloned, will that clone be the same? Should I separate it from the other females? She/he is a great plant.
2. Once I've collected pollen from a great male, how do I create seeds?
3. Can you “continually” clone if you want only a few plants at a time without losing anything (THC, CBD, taste, quantity, appearance, aroma)?

Thanks for your incredible magazine. I'm a new farmer and waiting for the results of my first-ever grow. I only have a few plants, but I'm very excited for harvest.

Dear D,

To answer your questions in order:

1. Rid your garden of any female plants that show male pollen sacs at once! These are hermaphrodites and have the ability to pollinate your other females, leaving you with a harvest full of almost useless seeds. Any clones of a hermaphroditic plant will be hermaphrodites as well. Find a more stable version of the same strain or experiment with the resulting seeds to attempt to back-cross the strain, and choose only the pure females from the progeny. (This isn't recommended for beginners, however, since breeding experience and knowledge are necessary in order to avoid wasting time, resources and garden space on schwag.)

2. Once you have pollen from a great 100 percent male plant, you can use a brush or Q-tip to apply that pollen to a flowering female bud. Do this application carefully at two to four weeks into the flowering stage for best results. As the plant nears harvest, you'll see plump seeds growing throughout the pollinated female flowers.

3. You can continually clone from vegetating plants in order to stay supplied with cuttings without losing the desired traits. Avoid cloning from plants that have suffered from stress or pests, as these plants will have degraded due to their circumstances.

Danko Tip: Mulch around the base of your outdoor plants to help the soil conserve moisture.



"Taco" leaves
are a sign of
deficiency.

SUBJECT: **Taco Leaf**

FROM: **Hazey H.**

🌱 My leaves are curling upward from the middle like a taco shell. Also, the stalks are turning dark purple. The leaves look like they're crinkly with rounded edges, and the stems are streaked. What's the problem?

Dear Hazey,
These are the classic symptoms of a calcium and magnesium deficiency. If you've been adding a cal/mag supplement, then it's possible you have nutrient lockup due to pH fluctuation. Typically, low pH levels

will cause the plant to become unable to take in magnesium, resulting in the kind of problems you're describing. Most nutrient formulas contain enough of these micronutrients for this not to be a problem, so raising your pH level from somewhere in the high 5's to more like 6.2 to 6.5 in soil and 6.0 to 6.3 in a hydroponic reservoir will usually do the trick.

If pH isn't the issue, you can use a calcium-and-magnesium additive solution, which can be purchased at any grow shop or online. This is preferable to Epsom salts or other homemade remedies, and the new leaf growth should come out green and uncrinkled.

SUBJECT: **Should I Stay or Should I Grow?**

FROM: **Chris D.**

🌱 I bought my first issue of *High Times* 25 years ago and sent in my subscription card the next day. I've got a problem and hope you can give me advice. I want to grow a couple of plants for myself. I have no interest in making a profit—maybe just give a little bit to some friends. Since I'm pretty much a lightweight myself, I don't need anything that's gonna "knock my dick in the dirt." A little bit goes a long way with me.

Now here's the problem: I'm a complete novice with no clue what I'll be doing. And to make it worse, I live in a one-bedroom apartment with a somewhat snoopy landlady. I have a decent-size closet to work with (5 feet high and 2 feet wide), but you'd be able to see light through the door cracks, and odor might be an issue too. The landlady probably won't recognize it, but just in case Officer Friendly should darken my doorstep sometime, I'd rather avoid it.

I've got a pretty good connection right now, but I'd like to grow some myself just to say that I did it and freak out my friends. I'll burn a bowl for you tonight. Thanks!

Dear Chris,

It seems odd to say this, since I spend most of my time trying to encourage people to grow their own, but in your case I think you should hold off on cannabis farming until you're in a better situation. Too many people try to force a grow into an undesirable location and end up jeopardizing their safety and livelihood in the process.

Since you have a decent connection, perhaps it's best to wait until you're in a situation where growing wouldn't be such a risk. The combination of a nosy landlady and your limited space and self-described novice status could prove disastrous. Next time you move, consider whether your new place could be compatible with an indoor garden and take it from there.

SUBJECT: **Grasshoppers**

FROM: **Jon J.**

🌱 This year's crop is looking outstanding! My plants are growing wonderfully this year. Lately, though, starting in August,



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Danko Tip: Check the ppm and pH of the nutrient solution in your hydroponic reservoir every day.

the grasshoppers have been in full attack mode: They're eating the buds that are starting to bloom and the water leaves too. Is there something I can do to stop them from eating all the buds before there's nothing left to harvest?



Dear Jon,

Grasshoppers can do serious damage to leaves and buds. They chew holes that look like tiny spots and take away from your plants' ability to grow and thrive. If an infestation gets out of control, plant death can occur quickly. That's why it's important to recognize the signs and act quickly in order to contain and destroy them.

I highly recommend taking the natural route with organic products that won't do lasting damage to your plants. Products containing spinosad or pyrethrin can be sprayed onto the affected areas without causing harm to pets or beneficial insects. Spraying a mist containing insecticidal soaps such as Safer Soap can be effective against grasshoppers, but it must be applied a few times for best results. Neem oil is also a good route to take, especially during the vegetative stage, since you don't want this nasty-smelling and -tasting stuff leaving residue on your flowers.

If you'd rather go the predator route, order some praying-mantis egg sacs through the mail and release them on your plants. Mantises are voracious eaters of grasshoppers and will devour many of them quickly and hopefully scare the rest away. Predator birds include bluebirds, mockingbirds and sparrows, so nesting boxes and birdbaths can add to their effectiveness. Chickens and ducks eat plenty of grasshoppers as well.

SUBJECT: **Growing Cold**

FROM: **Spun Diddy**

I'm a first-time grower living in Ontario, Canada. Today I woke up to a temperature of about 3°C. I was growing two plants but one turned out to be male, so I moved it to another location. (I heard

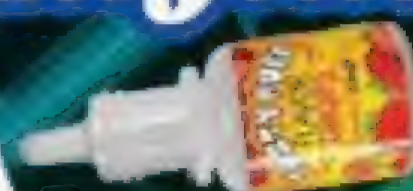
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4.
Replace tip
and cap



5.
Let sit 2 hours



6.
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shake



7.
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and enjoy!



1.
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2.
Remove
tip



3.
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Danko Tip: Keep humidity in the flowering room as close to 50% as you can, and approximately 60% in the vegetative room.

the male can turn the female into a male.) Anyway, my female plant honestly looks like it wants to keep on growing or is only just starting to show its full potential. It's opening up more spots to grow bud, but the weather's getting so cold at this point. I keep the plant in a shed with an open door to let the sun in, and I'm hoping the shed will keep it warm enough. It's a tall plant, over 6 feet, and still has less than a couple of ounces on it. The hairs on the buds are still all white. Have you got any suggestions on how I can keep this thing going, or if the bud will still be good if I salvage what's on the plant now?

Dear Spun,

From your description of the all-white hairs, it sounds to me like your plant is far from finished with the flowering stage of its life. If you harvest it now, you'll have premature pot, which is less than ideal and surely not up to the potential quality if you allow it to ripen and finish. Rip it down only as a last resort if you can't provide the proper environment.

Three degrees Celsius is around 37°F—just slightly above freezing. The only way to keep your plant outdoors (or in your open shed) is to add warmth to the surrounding area. A greenhouse with a heater or an attached sunroom would be ideal in helping you finish before your plants succumb to the coming frost outside.

You should also consider growing strains with shorter flowering times. Look for *indica*-dominant strains and stay away from *sativas* like Haze, which won't finish in time in your region.

SUBJECT: **Cannabis on Steroids**

FROM: **Heidi G.**

As a legal personal grower myself, and as someone who has worked in larger grow houses here in Nevada (where we have the highest testing requirements in the US), I'm extremely concerned about the heavy and unregulated use of any number of nutrients to produce monster plants. I do know that many grows that sell commercially don't flush their plants at all, and this is what everyone is smoking now. Clearly these additives are used to meet consumer demand for higher potency and to push out product quickly in a competitive market, but really they're just steroids for cannabis. They're going to eventually, if not quickly, start to have negative effects on people's health, and then we're screwed.

My question is: When are we, as a community of helpers (or consumers), going to address this problem so that marijuana can truly be considered an "organic drug" before people start getting sick and dying? We all have real reason to be concerned at this point of so much successful legalization.

Dear Heidi,

I agree with you 100 percent! I always recommend that people feed their plants sparingly, as it's always easier to add nutrients than to subtract them. Also, flushing is essential for the last two weeks of flowering, both in hydroponic gardens using chemical nutrients and in organic gardens using soil mixes. Lastly, I never recommend the use of plant-growth regulators, or PGRs: They're meant for ornamental plants only and shouldn't be added to anything we plan to consume. Thanks for helping spread the word! 🌿

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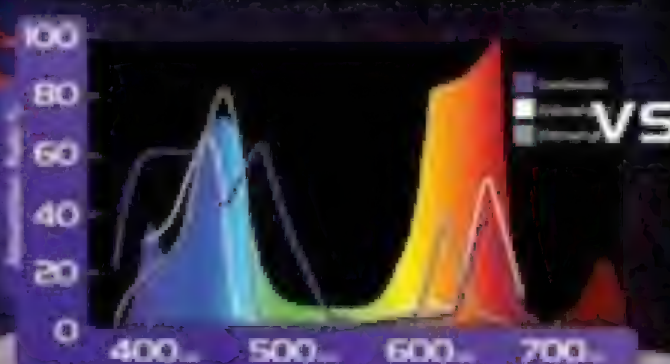
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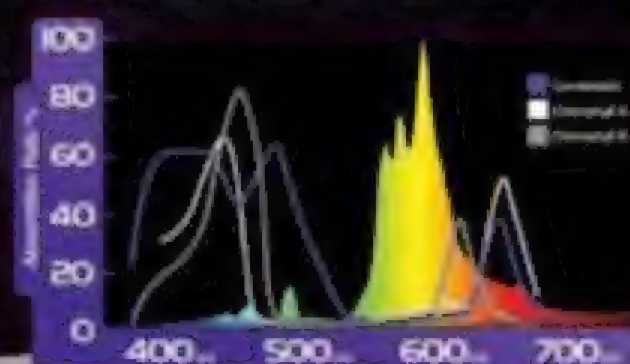
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Hot Products

What's new for cannabis cultivators and connoisseurs

1 Plant Smart

Prices vary

smartpots.com

Growing in fabric containers provides more oxygen for roots and better drainage to discourage root-rot. The best on the market these days are the original **Smart Pots**—BPA-free grow bags that come in many sizes. They're durable, reusable and stay cooler than plastic containers, which can spell the difference between life and death in the full summer sun. Roots are air-pruned instead of circling the pot—and plants just love them!

2 Toke to the Future

\$99.99, or \$124.99 with

ceramic nail

toker2.com

First introduced in the 1970s, these classic bongs still deliver the goods. The **Original Toker II** is made from lab-grade Class A borosilicate glass and features a flat bottom as well as added improvements. The bongs have always been easy to clean, and a new adapter allows you to use a slide or quartz banger for dabbing hash oil. Get 10 percent off and free shipping using the coupon code *toker2fan*.

3 Tent City

Prices vary

mars-hydro.com

Looking to grow without spending much dough? Try **Mars Hydro Grow Tents**! They're reflective, lightproof, waterproof, and can be assembled by one person. Each tent features a tray liner, heavy-duty zipper, and steel-tube frame and light hanger, along with built-in vents for exhaust and intake to make ventilation easy (unlike with closet grows). And with prices starting at \$77.99, they're an easy and affordable way to get growing.

4 Vital Vines

\$1.95, small; \$4.95, large;

\$14.95, king-size; \$32.95,

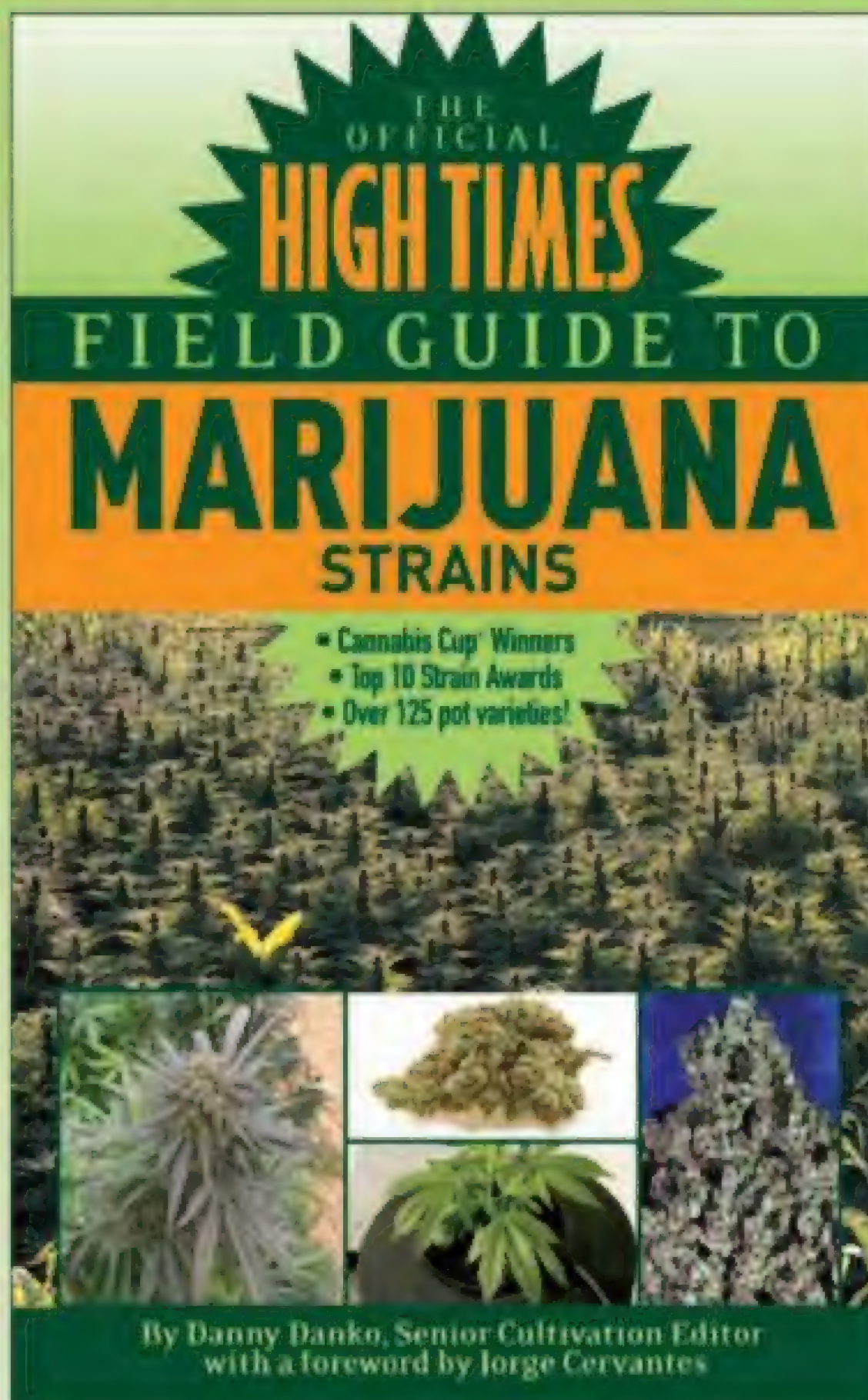
supreme-size

italhempwick.com

If you wish to truly savor the flavor of the essential oils and terpenes in your connoisseur-grade cannabis, you can't taint the essence with butane from lighters or the sulfur on matches. From Hawaii, **I-tal Hemp Wicks** provide a clean, pure flame using ultra-refined beeswax and raw hemp twine with no chemical treatments. Get a free sample from their website and taste the difference.

"In this excellent field guide, Danny's years of experience translate into easy-to-reference information on more than 125 strains, all at the flip of a finger, condensing everything you need to know into an easy-to-read, well-researched, concise package—with great photos too!" —JORGE CERVANTES,

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FOR THE EGGLESS COOKIE DOUGH:

$\frac{3}{4}$ cup softened cannabutter
1 cup brown sugar
 $\frac{1}{2}$ cup white sugar
2 tbsp. vanilla extract
2 cups flour
2 tbsp. water
 $1\frac{1}{2}$ cups chocolate chips

FOR THE SANDWICHES:

2 bags square pretzels
 $\frac{1}{2}$ cup chocolate chips (for dipping)
1 tsp. coconut oil

Chocolate-Dipped Cannabis Cookie-Dough Pretzel Bites

You'll crave these decadent morsels that combine sweet and salty flavors with a dose of THC.

Cannabis cook Keena Moffett ran a professional bakery for years before she became inspired to add weed to her creations. Driven by the desire to create edibles as an alternative to smoking for patients in need, Keena authored an e-book featuring many of her signature recipes, including mini-cheesecakes, pecan pie, molten lava cakes, doughnuts, cupcakes and cookies galore, all infused with cannabis.

These wonderful munchie bites combine the deliciousness of cookie dough with the classic sweet-and-savory tastes of chocolate-covered pretzels. Keena has developed a recipe that removes the raw egg, eliminating the risk of salmonella poisoning from the cookie dough, and then sandwiches this amazing substance between salty pretzels covered in melted chocolate.

It's a delight that you'll want to make again and again, perfect for parties and potlucks. The next time you smoke a nice joint, kick back with some of these amazing treats and allow yourself to indulge!



Keena Moffett is the author of *Cannabis Creations: Beyond the Brownie*, available online at gastronomemedia.com. You can find her on Instagram at [@dine_and_flash](https://www.instagram.com/dine_and_flash).

Using an electric mixer, whip the cannabutter and sugars together, then add vanilla extract and combine well. Slowly add flour to the wet ingredients until a crumbly dough starts to form. Add water 1 tablespoon at a time until the cookie dough forms into a soft ball, then slowly mix in the chocolate chips.

Using a spoon, roll your desired amount of dough into small balls. Put a layer of pretzel squares on a silicone mat or cookie sheet, then top each one with a cookie-dough ball. Press another pretzel on top of each to make small sandwiches. Melt the remaining chocolate chips with coconut oil in the microwave, then dip each sandwich halfway into the melted chocolate.

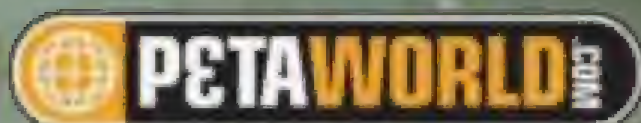
Allow the dipped bites to cool on the silicone mat in the freezer for 10 minutes, and enjoy! This recipe yields approximately 80 bites.

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Nice Canna's "The Herbalist" blends include such innovative flavors as blueberry lavender, orange sage, peach basil and strawberry rosemary, all with 15 milligrams of THC. necannacompany.com

KINE DROPS

Available in either pineapple or watermelon flavors, Kine Drops feature 15 mg of THC and 15 mg of CBD. kinecandy.com

99TH FLOOR

The chef-driven flavors of 99th Floor candies include cherry, green apple, pineapple and pandan (a Philippine fruit), all with just 5 mg of THC. A watermelon flavor is also available with 15 mg. *Instagram: @99thfl*

ALTAI EDIBLES

The sugar-free Honey Lemon Soothers and Cherry Vanilla Soothers from Altai Edibles deliver 10 mg of THC each. altaibrands.com

BARON'S CONFECTIONS

These Citrus Habanero candies contain just 2 mg of THC for a tasty micro-dose. baronsconfections.com



Flavor of the Month



Bacon Peanut Brittle

This crunchy, sweet-and-salty treat comes to you from Zapt Edibles, an artisanal bakery in the San Francisco Bay Area. Each package contains four servings with 30 mg of THC apiece. Cannabis consumers are loving this bacon peanut brittle so much that 25 boxes sold out at the Green Remedy dispensary in one day! Winner of the Best Candy prize at Hempcon in 2016, Zapt stocks this bacon brittle in seven Bay Area shops, so get it while you can. Also available for your medicating pleasure are Flourless Chocolate Tortes, Seven-Layer Bites and a Spicy Zapt Mix. zaptfoods.com

They Put Pot in What Now?!



Psychedelic Peanut Butter

Your PB&J sandwich will never be the same with this spread from Royal Highness Edibles, which boasts 300 mg of THC in each 4-ounce jar, perfect for mixing into smoothies and desserts or for creating a peanut sauce to accompany an Asian meal. Of course, you can always just dip some carrot and celery sticks for a snack that will get you healthy and high! Royal Highness also makes a chocolate-hazelnut spread as well as a variety of tasty snacks, including pretzels, cheese crackers and nut mixes, so stock up the next time you're in San Diego for a treat that can't be beat! royalhighnessedibles.com



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The Marijuana Majority

The entourage effect, pot & pregnancy and discrimination.

Got a question for Dr. Mitch? Email him at 420research@gmail.com.

Tell me that whole-plant medicine is better than synthetic!

Terra Firma

Hi Terra,
CBD is most effective under one simple condition: when it's applied with all of its entourage-effect pals in a natural extract. All by its lonesome, CBD is only effective at very specific dosages. Chalk up another win for the whole plant!

I feel like the world is against me because of my cannabis use. Is there such a thing as cannabism, like racism or sexism?

Nelson Marley

Yo Nelson,
One of my students showed that if people see your picture and assume you're a cannabis user, they also assume you've got a bad memory. Actual memory abilities didn't vary between users and non-users—but if people thought you merely *looked* like a cannabis user, whether you were or not in real life, then they thought your memory was bad, too. I'm not sure if "cannabism" is the name we want, but there's definitely a bias against people who look like fans of the plant.

Tell the truth: If your mom smoked when she was pregnant, will you be retarded?

Lenny Rabbit

Yo Lenny,
This is the kind of stuff that gets me in trouble. Researchers from my alma mater (Columbia University) showed



that kids exposed to cannabis in utero and those who weren't differed on cognitive measurements only rarely—and even then, the difference was rarely very big. Every pregnant woman should take good care of herself, but cannabis use during pregnancy really isn't child abuse.

Are doctors finally catching up with normal people when it comes to medical cannabis?

Oscar Snarky

Hi Oscar,
New reviews in the best research journals offer broader support than ever. Medical cannabis consistently delivers not only relief from pain, but also improves the quality of life. Experiments involving other ailments keep stacking up too. We're close to the day when everyone will brag that they always supported medical pot. 🌿

Dr. Mitch Earleywine, PhD, is the author of Understanding Marijuana and The Parents' Guide to Marijuana.

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Big Mistake

Even Republicans don't support a federal marijuana crackdown.

Paul Armentano is the deputy director of NORML. Visit norml.org.

THE REPUBLICAN PARTY controls the legislative and executive branches of the US government for the first time since the 109th Congress, which ran from 2005 to 2007. Understandably, the GOP's leadership is anxious to push forward an agenda that comports with the longstanding conservative principle of limited government as well as with the new president's populist rhetoric. Advocating for marijuana-policy reform ought to be part of this agenda. Here's why.

Outside the DC Beltway, support for enacting regulatory alternatives to pot prohibition is uniquely bipartisan. According to the latest polling by Gallup, six out of 10 Americans believe that the adult use of marijuana "should be made legal." Gallup's pollsters found that legalization was most likely to be favored by independents and Democrats, but also that support among Republicans had more than doubled over the past decade.

The support among Republicans for legalizing medical marijuana is even higher, with 85 percent of GOP voters endorsing its therapeutic use, according to nationwide survey data released this week by Quinnipiac University. But perhaps most strikingly, Quinnipiac's pollsters also found that nearly 75 percent of voters—including majorities of Democrats, Republicans and independents—"oppose the government enforcing federal laws against marijuana in

states that have already legalized medical or recreational marijuana."

Nonetheless, the Trump administration appears to be planning to do just that. In recent remarks, Attorney General Jeff Sessions characterized marijuana use as a "life-wrecking dependency... that's only slightly less awful" than heroin use. And on the same day that Quinnipiac released its survey data, White House press secretary Sean Spicer indicated that Sessions's Justice Department was planning to pursue "greater enforcement" of federal anti-marijuana laws in the eight states that now regulate its adult use.

Such a move by the federal government would be a stark departure from the position of the prior administration, which largely let these voter-initiated laws move forward unfettered. It also represents an about-face from Trump's own position, given that he'd previously stated that, as president, he would not use federal authority to target states with adult-use laws. For instance, while campaigning in Colorado in August, Trump responded to the question "[Do] you think Colorado should be able to do what it's doing?" by stating, "I think it's up to the states, yeah. I'm a states person. I think it should be up to the states, absolutely."

And so it should be. According to a 2016 report by the Cato Institute, the adult-use regulatory systems are working

largely as voters intended. They have not been associated with increased marijuana use among young people, rising crime rates, or increased accident rates in the workplace. Further, tax revenue from these regulated markets now exceeds the initial expectations.

In short, a federal crackdown would be a big mistake. Rather than picking an unnecessary fight with the majority of American voters, the administration should consider embracing common-sense reforms. Endorsing bipartisan legislation like HR 975, the Respect State Marijuana Laws Act, would be a good place to start: In accordance with the electorate's wishes, the act would prevent the federal government from criminally prosecuting individuals or businesses engaged in state-sanctioned activities related to the possession, use, production or distribution of marijuana.

Despite more than 70 years of federal prohibition, Americans' consumption of and demand for cannabis is here to stay. It is time for politicians to acknowledge this reality and amend the federal marijuana laws in a manner that comports with the majority public opinion and the plant's rapidly changing legal and cultural status. The Trump administration has the opportunity to take the lead on this issue. It would be an enormous political misstep to do otherwise. 🌿

FREEDOM FIGHTER

Protect and Serve

Scott Gordon is looking out for Portland pot smokers.

Born and raised in Alabama, Scott Gordon is a passionate community activist who has called Portland, Oregon, home for more than two decades. He's currently the executive director of Portland NORML and recently served as a member of the Oregon NORML board of directors. Gordon's marijuana activism dates back to the 1990s, when he advocated and voted for California's legendary Proposition 215, which legalized medical marijuana

across the Golden State.

"With the newly legalized marijuana market evolving at an Indy Speedway pace," Gordon says, "I believe team activism is still important. We need to protect what we've achieved up to this point."

For the 2017 legislative session, Gordon and several of his colleagues from Portland NORML are taking on the issue of workplace drug-testing—a practice that unfairly discriminates against law-abiding marijuana



consumers—with a coalition of NORML chapters from California, Washington and Colorado. Portland NORML's legislative committee, in conjunction with the Oregon chapter of the Employment Lawyers of America, worked on drafting and filing SB-301, a measure that would prohibit employers from discriminating against adults who legally consume marijuana during their non-work hours.

Gordon is also heading up Portland NORML's work on SB-788, which would create regulations

for the consumption and sale of marijuana items at events.

In addition to fighting for marijuana consumers in Oregon, Gordon is the programming director for 420Radio.org, where he hosts the *Urb Thrasher Flower Hour Rock & Weed Show* under the alias Urb Thrasher. He is also the owner and founder of Urb Age Designs, a cannabis-themed apparel company for progressive adults.

A true champion of the plant, Gordon is a regular at the Seattle Hemp Fest and still proudly smokes flowers, preferring joints and bongs to vapes or dabs.

By Kevin Mahmalji, NORML national outreach coordinator

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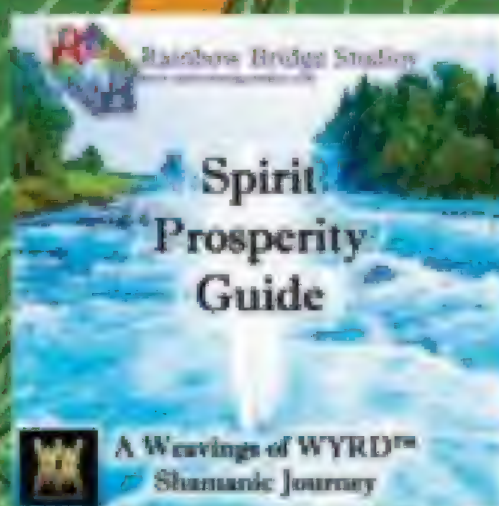
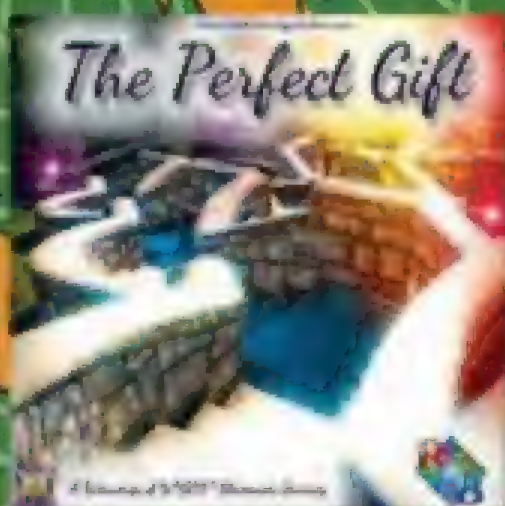
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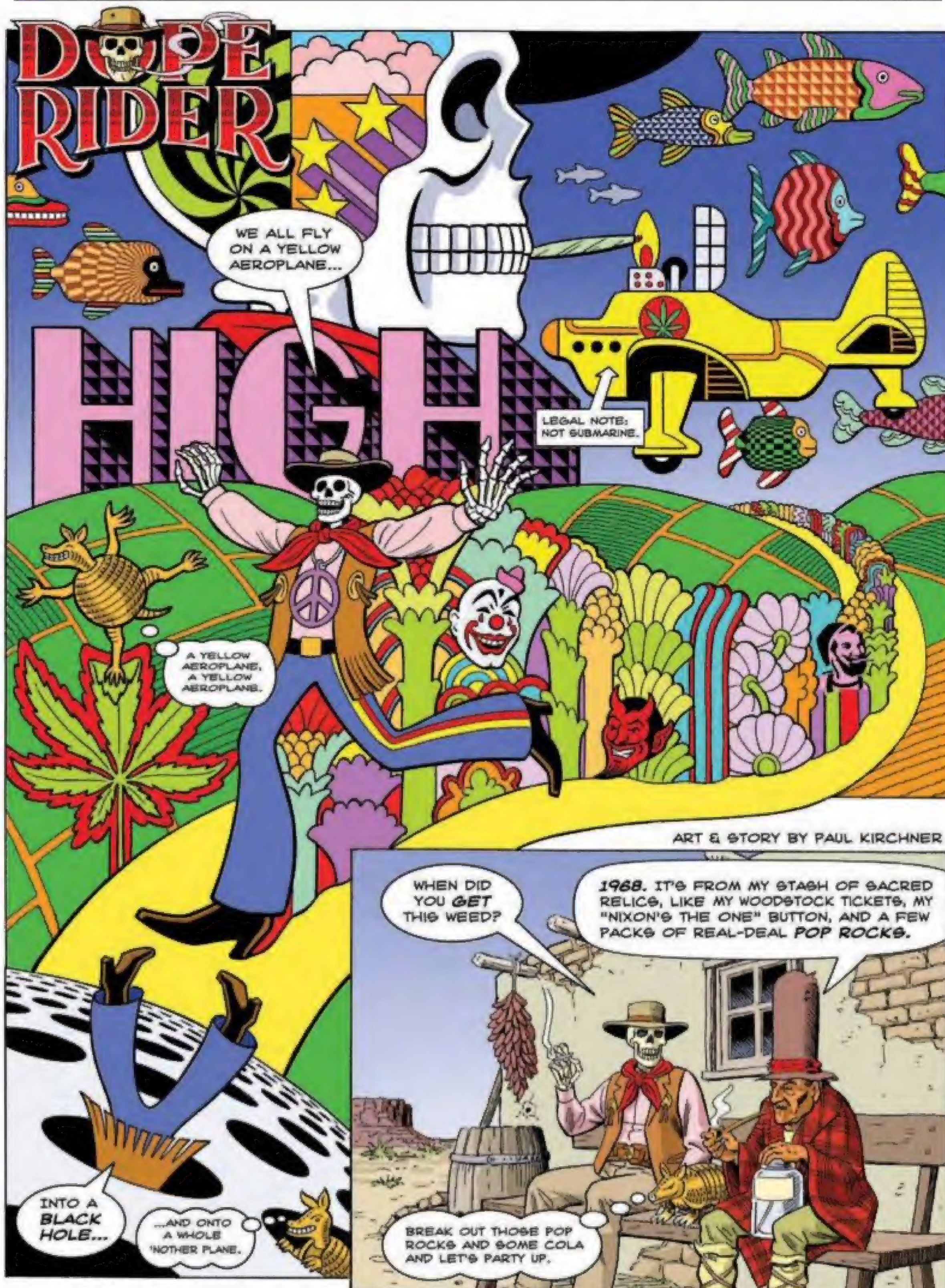
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A full-body photograph of Paul McCartney. He is wearing a black fedora-style hat, a black t-shirt, and black pants. He is sitting on a white wooden stool. He is pointing his right index finger towards a graphic on his t-shirt. The graphic consists of the words "EAT NO" in a sans-serif font above a white silhouette of a cow. He is also wearing a black wristwatch on his left wrist and a white bracelet on his right wrist. The background is a plain, light-colored wall.

Many years ago, I was fishing,
and as I was reeling in the poor fish,
I realized, "I am killing him—all for
the passing pleasure it brings me."
And something inside me clicked.
I realized as I watched him fight
for breath, that his life was as
important to him as mine is to me.

I AM PAUL McCARTNEY, AND I AM A

VEGETARIAN

PETA.org



Pot Shots

Show us what you got!

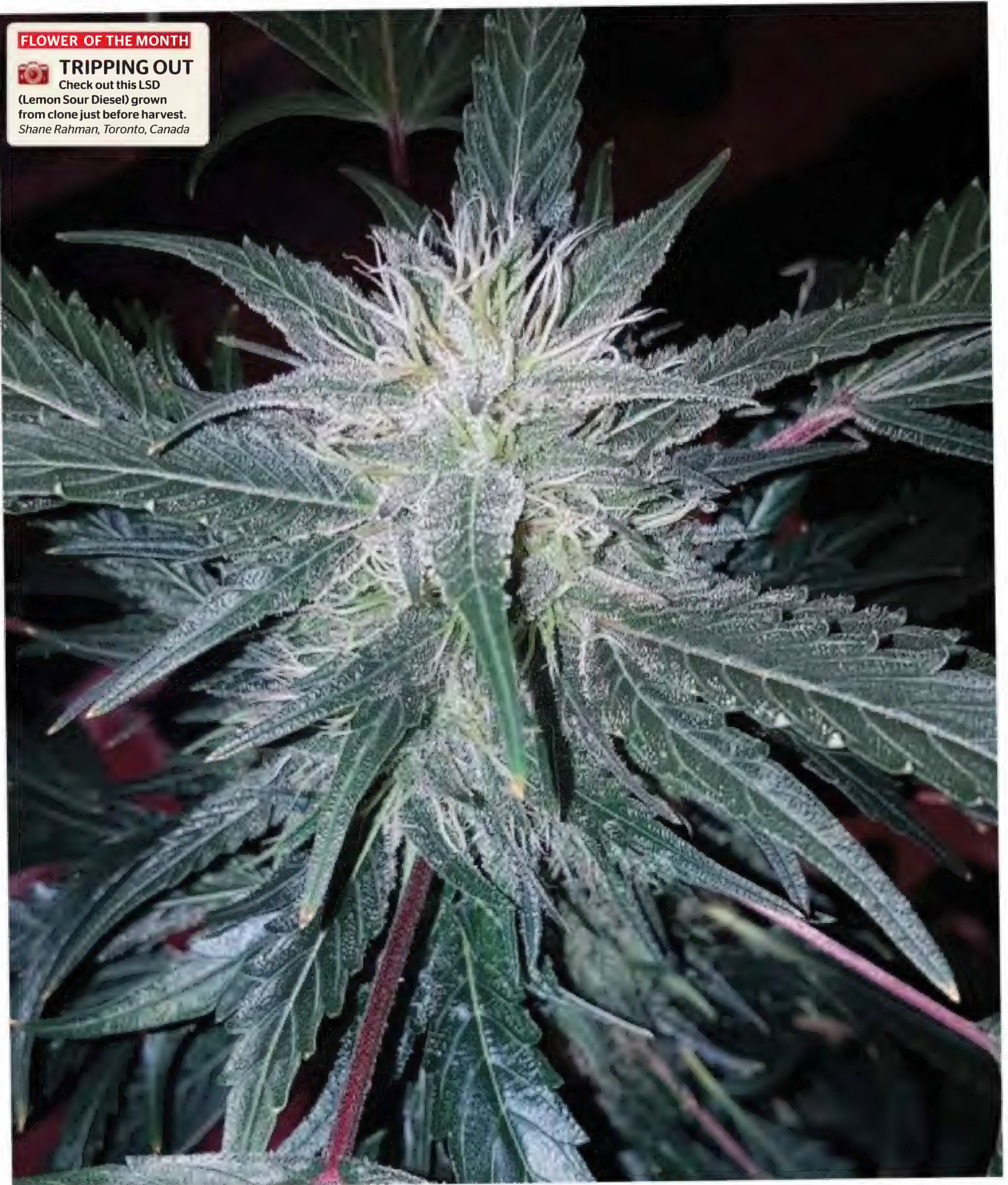
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FLOWER OF THE MONTH



TRIPPING OUT

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from clone just before harvest.
Shane Rahman, Toronto, Canada





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Tax Revenue**



**Regulated Systems
Will Restrict Youth Access**

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It's Time to Tax & Regulate Marijuana

WWW.NORML.ORG/JOIN



STASH OF THE MONTH



LAY LADY LAY

Thought you guys would like this pic of me and would maybe want to use it. @jessi.bones



NUG OF THE MONTH

LITTLE PURPLE PILL

What do you guys think of this Sweet Dreams photo captured on my iPhone 5s? David S.

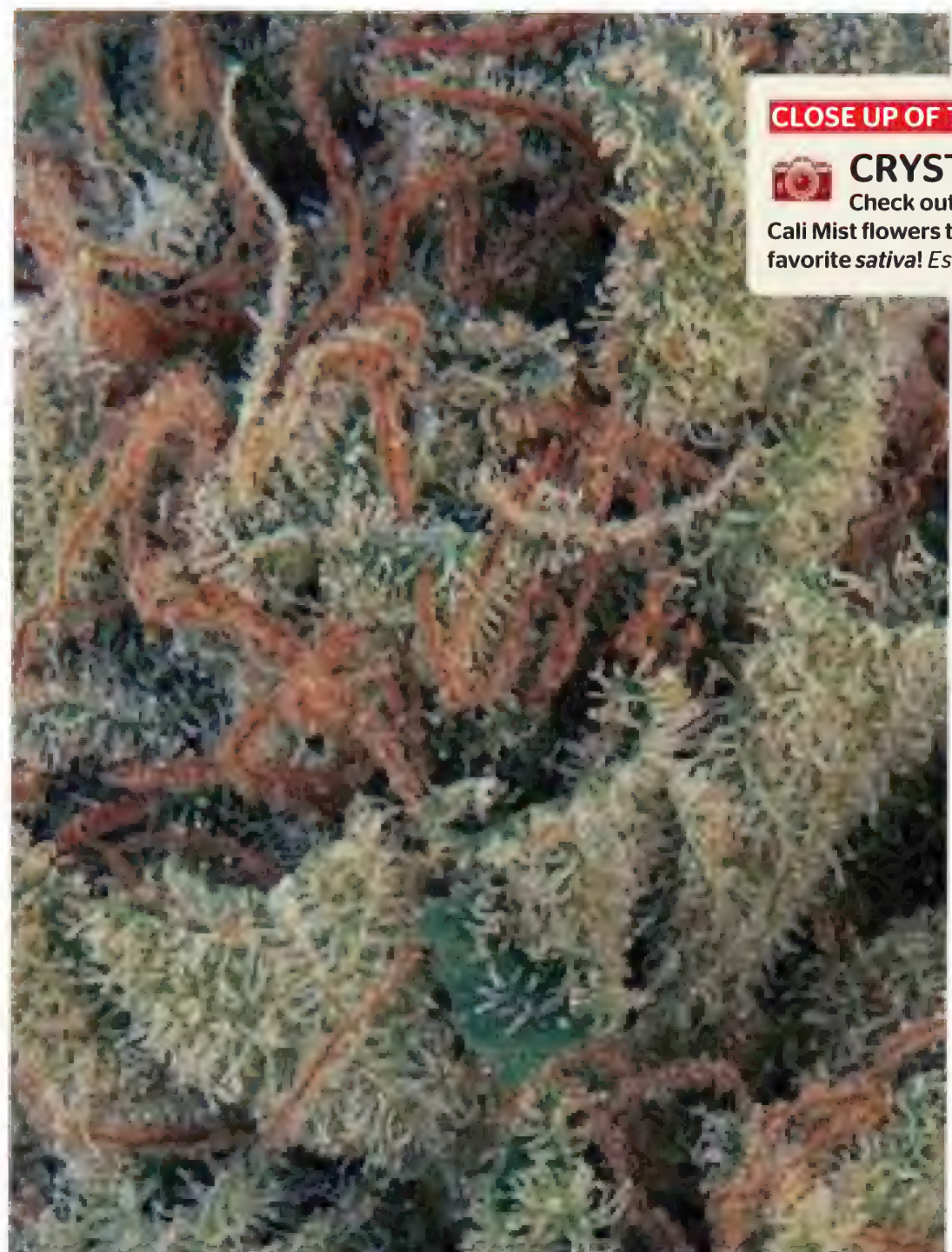


CLOSE UP OF THE MONTH

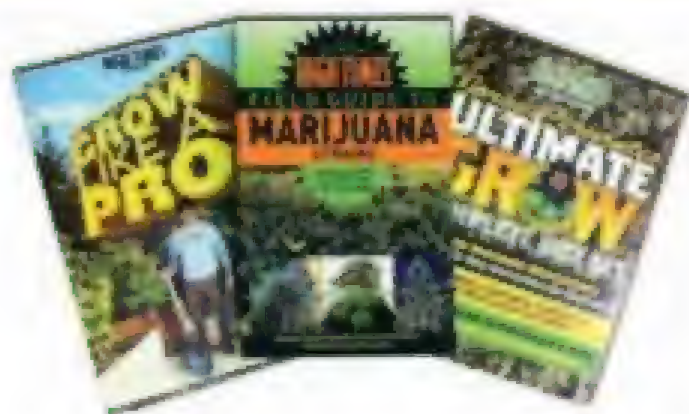


CRYSTAL MIST

Check out how frosty my Cali Mist flowers turned out. My favorite sativa! Essential Oil Hunter

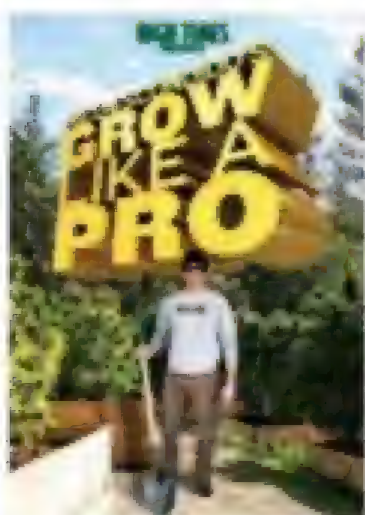


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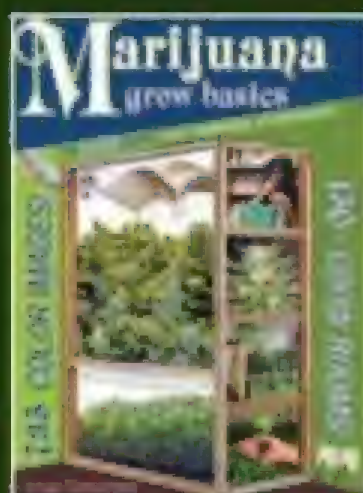
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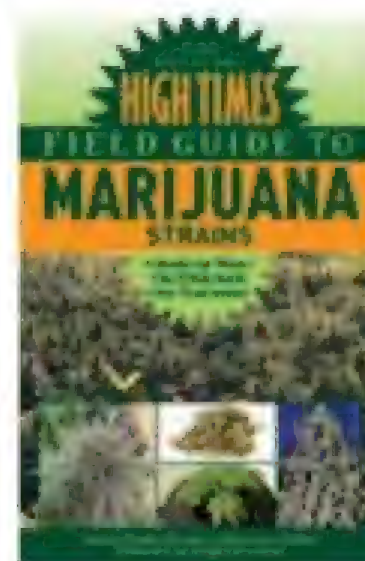
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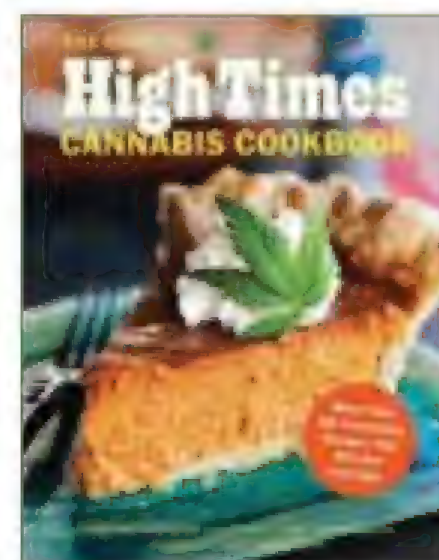
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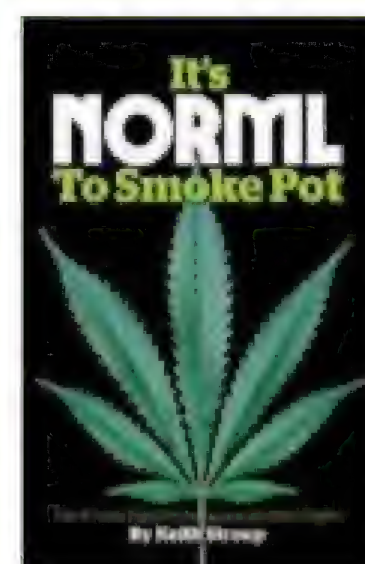
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► Best Tasting Buds on Earth

Building upon our recent *Strongest Strains on Earth* feature (May 2017), Nico circles back to the database to compile all lab data on terpenes from our 2016 Cannabis Cup competitions to find out which strains have the best flavors and aromas on the planet. The annual feature includes terp profiles for over 40 strains and data on over 25 terpenes most prevalent in cannabis.

► Beat The Heat!

High temperatures cause serious damage to plants and can quickly result in a disaster instead of a heavy harvest. Cultivation contributor Erik Biksa reveals tips, tricks and effective techniques for cooling down your cannabis growing space.

► Back to Cali

High Times returns to San Bernardino for the first SoCal Cup of 2017—on 4/20 weekend! Read all about the incredible flowers, concentrates, edibles, topicals and more featured at this epic Cup!

► High Tech

The cannabis industry is one of the world's fastest growing industries, predicted to be worth over \$20 billion by 2020. Part of that incredible success is directly due to innovative technology developed and implemented by cannabis businesses. We take a closer look at some of the technology currently driving marijuana business.

► Eclipse Tripping

The next total solar eclipse arrives August 21, 2017. To prepare, *High Times* takes an in-depth look at these celestial events that can be intense, psychedelic experiences for the initiated.

FREE WEED FROM DANNY DANKO



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Growing your own marijuana can be both a liberating and political act. In this pot-cast, **High Times** Senior Cultivation Editor and author Danny Danko provides news, activism reports and cannabis cultivation tips for connoisseurs, aficionados and medical patients alike.

BONUS

Interviews with expert growers and professional seed breeders. 'Strain of the Week' and ganja frowing questions & answers.



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1 **Happy Birthday DANKO** 2 **FUCKIN' TOASTED** 3 **the Dude Abides** 4 **Willie Nelson** 5 **Cannabis pups!** 6 **Banana Kush** 7 **Keith Richards** 8 **Starburst** 9 **Colorado flag** 10 **LONG LIVE GONZO** 11 **ALL THE FLORIDA BOYS SAY SO!!** 12 **TAKE A BITE OUT OF CRIME LEGALIZE WEED!** 13 **Strawberry COUGH** 14 **Alaskan Thunderfuck** 15 **GRATEFUL DEAD** 16 **What a great idea man...** 17 **GOOD PEOPLE POT** 18 **for PTSD** 19 **Love your Ladybugs** 20 **Life is like a shit sandwich... the more bread you've got, the less shit you have to eat.** 21 **Smoke 2 joints at 8:40** 22 **Legitimize it Canada** 23 **Homer Simpson** 24 **Treebasing** 25 **Adamant Oil** 26 **Baby Dabs** 27 **Smugglers** 28 **RIP Chuck Berry** 29 **Grow your Own Gorgeous Ganja** 30 **FUCK SPIDER MITES** 31 **Don't drink and drive... PARK and SPARK** 32 **Far Out** 33 **IT'S GOOD!** 34 **Alaskan Thunderfuck** 35 **GRATEFUL DEAD** 36 **What a great idea man...** 37 **Love your Ladybugs** 38 **Life is like a shit sandwich...** 39 **Smoke 2 joints at 8:40** 40 **Legitimize it Canada**

What would you like to see on the Pot 40? Write your ideas on this ballot and mail to:

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